The Commercial Car Journal

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Is the Truck Dealer Alive to the Merchandising Possibilities of Truck Tires?

Truck Tires Are a Standard Article and Afford the Dealer an Opportunity to Develop a Separate and Very Profitable Department

By C. P. SHATTUCK*

IT is a well known fact that the commercial car dealer operates in a field of endeavor distinctly different from that of the passenger car dealer, and that the truck dealer merchandises transportation and is brought into contact with a clientele that is not influenced by those factors which frequently determine the sale of a passenger car. In other words, the truck dealer cannot capitalize the human equation.

Because he deals with hard headed business men and handles transactions frequently involving thousands of dollars, the average sucessful truck dealer inclines toward egotism, and is disposed to look upon the passenger car dealer with tolerance and refers to him as an order taker. But when it comes to taking advantage of the numerous opportunities afforded by the automotive industry, other than the merchandising of cars, the average passenger car dealer has the truck dealer snubbed to a post.

Develops Opportunities

In the early days of the passenger car industry the dealer was content to sell cars and the few standard fittings, such as tops, speedometers, etc., not supplied by the car manufacturer. Later when the car came more fully equipped, the dealer found that selling cars had its limitations, that his overhead cut into the profits, particularly when sales fell below the normal average. Instead of complaining, the dealer, aided and abetted by the manufacturer, reached out and began to develop new business, stocked standard accessories, equipment and supplies. These were attractively displayed and through proper merchandising developed into a separate and most profitable department. And when the war curtailed the output of passenger cars hundreds of dealers with no experience in the motor truck field, took up a line of trucks and so successfully developed merchandising of transportation that they built up an effective sales organization.

Truck Dealer Lacking in Initiative

The truck dealer occupies the same position as did the passenger car dealer when the passenger car industry was in its infancy. In other words, the average truck dealer is so busy selling trucks, and occasionally getting the commission on a body, that he has overlooked many fields with undeveloped possibilities and, in some instances, the wonderful opportunities are his for the taking. Although the truck dealer maintains a service station or repair shop and stock parts, it is because his contract with the truck manufacturer requires it. He does not maintain a service station because of the profit in it, but because it is essential to the operation of the trucks he has sold, because service is one of the requirements of motor truck transportation.

Too Busy Making Money

Engrossed as he is in perfecting his sales organization and selling, the average dealer has not reached out for the business that is rightfully his and which would greatly increase his profits to say nothing of improving his service to his customers. I do not wish to go on record as stating that the average dealer is content to merchandise transportation alone, but do contend, after careful investigation of dealers' methods in several states, that he lacks vision, cannot foresee the undeveloped possibilities in the motor truck industry, and the term industry is exceedingly broad in scope.

The successful truck dealer of the future will be the person who now anticipates the not very distant time when the service afforded the customer will include supplying his every requirement, a service that will not influence or compel the truck owner to depend on other than the dealer for the proper and economical maintenance of his trucks. And the dealer who does not meet and anticipate to a certain extent the requirements of his customer may realize too late that another dealer has.

Does Service Influence Sales?

Does service influence sales? The average dealer will say it does, at least he uses the word "service" when talking to a prospect. The prospect may not investigate the service but he will learn through experience that the term "service" is elastic. A few progressive dealers, who concentrate on the development of their service to meet future conditions, are injecting a new angle in their sales methods by encouraging their salesmen to bring the prospect to the service station where he is turned over to the service manager for an inspection of the service station, its equipment and facilities. If the service station manager be tactful, his description of the time and labor saving equipment cannot fail to make a favorable impression upon the new prospect as well as the owner. The suggestion or practice may be radical but it is contended that it will result in a better understanding between the user and the dealer as to the problems of each, and the service rendered, and thereby retain the good will of the customer.

Influencing the Prospect

Small details frequently influence a prospect, particularly when the problem resolves itself into choosing between two different makes of trucks. This applies particularly to the service rendered and an instance is cited to illustrate the contention as well as to point out a field of undeveloped possibilities for dealer.

In a certain New England city there are two representatives of two well known and dependable makes of trucks. Both of these dealers were in competition for the order of a large manufacturing company and both brought every argument to bear. The buyer was a typical New Englander; conservative and prone to investigate very thoroughly. After all makes had been eliminated but the two, he called in both dealers and submitted an unusual proposition. He said, "Gentlemen, I am still undecided as to which make of truck I will purchase. Both of you have ably defined the merits of your trucks and I am satisfied that either will meet my requirements. I will give each of you fifteen minutes to present further argument why I should make a selection and the one presenting the best reasons or sales talk gets the contract."

Service Closed the Sale

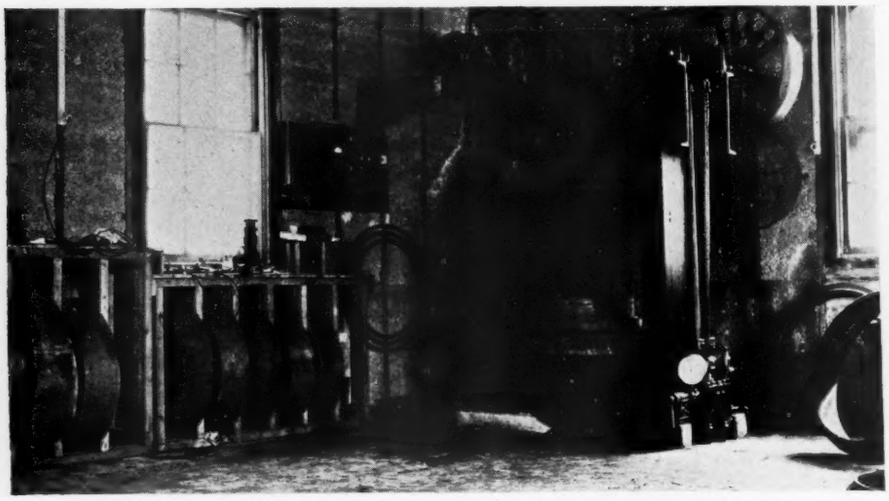
A most novel method, perhaps, but it is explained that the manufacturer was at one time a salesman, employed salesmen and it may be that he thought he would learn a new angle in merchandising. Both dealers presented their reasons why their propositions were best.

*This is the first of a series of merchandising articles by Mr. Shattuck. The second will appear in an early issue.

The one that obtained the contract learned afterwards that it was through his service policies. It developed that in analyzing cost figures, he called attention to the fact that tires on a truck must be renewed, and that it required removing the wheels, demounting the tires and mounting new ones. He also called attention to the usual method of a dealer sending out the wheels, the delays incurred and that these included the time lost in loading and unloading at both ends of the trip.

Pregnant With Possibilities

The dealer who lost out in this case, when questioned about tires, replied that there were plenty of places where the owner could buy his tires and have them put on. There are a great many dealers of this type who have not as yet taken into consideration that it is as necessary to replace a tire quickly, as it is to replace broken or worn parts, and that any delays incurred in either case mean a loss to the truck owner. The latter is fast learning to discriminate between service and real service.



Wellman-Seaver-Morgan 200-Ton Press, Installed by New Jersey Dealer and Showing Motor Drive of Pump and Arrangement of Band Racks

The successful dealer also informed the prospect that it cost $30 a day to operate the truck he was interested in and that a loss of half a day when renewing a tire meant $15 loss, to say nothing of the services of the truck. He also emphasized the point that there are six tires on the truck. Mr. Dealer concluded his arguments by stating that his service station was equipped with a tire press to give his customers day and night service, and that a tire could be replaced or repairs effected at the convenience of the owner, without loss of time, etc. Mr. Dealer also emphasized the fact that he carried the sizes used on his truck in stock, and that there would be no delays or dissatisfaction with the service rendered.

Before analyzing the reasons why the truck dealer is the logical person to merchandise tires, let us consider the possibilities of the tire industry from the dealer's standpoint. Statistics, estimated, of the commercial car industry compiled by the N. A. C. C. and published in the February issue of the COMMERCIAL CAR JOURNAL, show that there are 480,000 trucks in use in the United States and that the proposed production for 1919 is 327,930. Now it is but logical to assume that the 480,000 in service will require at least a renewal of four tires during the present year and that those to be produced will need a like number within twelve months after they are placed in service. These are very conservative figures, for one tire authority states that the average number of tires per truck is five or more per year. Statistics of thirteen different capacities show that six use dual tires on the rear wheels.

A Potentiality of Millions

Assuming that the industry will produce 200,000 trucks in 1919, which may be said to be a safe production, as pointed out in the May issue of the COMMERCIAL CAR JOURNAL, and subtracting 23,600 trucks representing those of 1000 and 1500 lb. capacities, some of which will be equipped with the pneumatic tire, there still remain 176,400 which, in view of the elimination of the pneumatic equipped trucks, may be said to be users of the solid tire.

According to estimates based on the average size used by trucks of capacities ranging from one to seven tons inclusive, and assuming that only four tires will be replaced with new ones on each truck, the 176,400 will require $51,906,120 worth of tires. If we include the 480,000 used trucks estimated to be in service, and which will require $140,640,000 worth of tires, there will be a market for solid tires valued at $192,546,120 list price in 1919-20. These figures are based upon the 1919 estimated production as follows. (The figures are arbitrary and are based on a renewal of a complete set, four and six, single and dual types respectively):

Truck Capacity	*Per Cent.	Estimated Production	Average Size of Tires	Value List Price
1 Ton	42.3	84,600	34 x 4 Single	$18,747,360
1½ Ton	13.2	26,400	36 x 5 Single	7,830,240
2 Ton	15.2	30,400	36 x 5 Single	9,016,640
2½ Ton	3.5	7,000	36 x 7 Single	3,151,400
3 Ton	1.8	3,600	36 x 7 Single	1,620,720
3½ Ton	5.9	11,800	36 x 5 Dual	4,069,820
4 Ton	0.3	600	40 x 5 Dual	287,340
5 Ton	5.1	10,200	40 x 6 Dual	5,956,800
5½, 6, 7 Ton	0.9	1,800	40 x 7 Dual	1,225,800

* The per cent. and production figures are estimated on a production of 200,000 trucks, the N. A. C. C. percentages being utilized.

A Corner of the Tire Press Department of a Bayonne, N. J., Dealer. He Installed the Press Without Aid

Illustrating Installation of Tire Press of White Plains, N. Y., Dealer. The Foundation is Sunk Below the Floor

Who is to Sell These Tires

It may be argued that the 480,000 trucks in use are served by the service stations of the tire maker, tire stores, etc. Even if this condition were true, which the writer doubts, there is an estimated production of 176,400 trucks which have not as yet been retired, and it must be remembered that the saturation point will not be reached for many years to come.

Who is going to merchandise the truck tires, the profits from the sale of which even at 10 per cent. net, a low figure, will yield millions of dollars? Despite the fact that the tire manufacturers have established factory branches in the larger cities and service stations in the smaller places, and that competition is exceedingly keen in some cities, an investigation in a number of places shows that truck dealers are beginning to realize that in allowing their customers to go elsewhere they have thrown good profitable business over their shoulders.

Why the Truck Dealer Should Merchandise Tires

The reasons why a truck dealer should merchandise tires are because it is a part of service, aids truck sales and is highly profitable. It helps sales, for it is an aid to developing new customers, particularly the fleet owner, who is a big buyer. Merchandising tires brings the dealer into personal contact with truck users, gives him an insight into the owners' transportation requirements, and paves the way for repeat orders and new prospects.

Concrete examples of truck dealers installing a tire press and merchandising tires support these contentions. R. M. Sauers, Federal dealer in Springfield, Mass., said that in addition to saving time, "Our tire press indicates to a prospective buyer that we are in a position to give him service, and have the equipment necessary for that purpose."

Stamford Dealer Uses a Press

E. J. Denning represents the Mack line of trucks in Stamford, Conn., also maintains a fleet of ten trucks and engages in general transportation. Previous to the installation of a tire press he either sent his wheels to New York or drove the trucks there for tire replacements, frequently losing one or two days' service of the machines. He used to do as many dealers are doing at present, send his customers and possible profits away. He handles Goodyear, Firestone, Goodrich and Kelly-Springfield tires and says that he has found merchandising tires highly profitable in his territory despite the fact that there is strong competition in the town. He is constructing a new garage on a plot of ground 75 x 200 feet and the greater part of this is to be given over to truck tire service. A space 35 x 200 will be covered to house trucks while tires are being renewed and this will have a cement floor as will the tire press department. A traveling crane will be utilized to carry the wheels from the trucks to the press and return, and the press room is to be equipped to handle all types of rims, tires, etc. Road service is to be featured, a truck being equipped for this work.

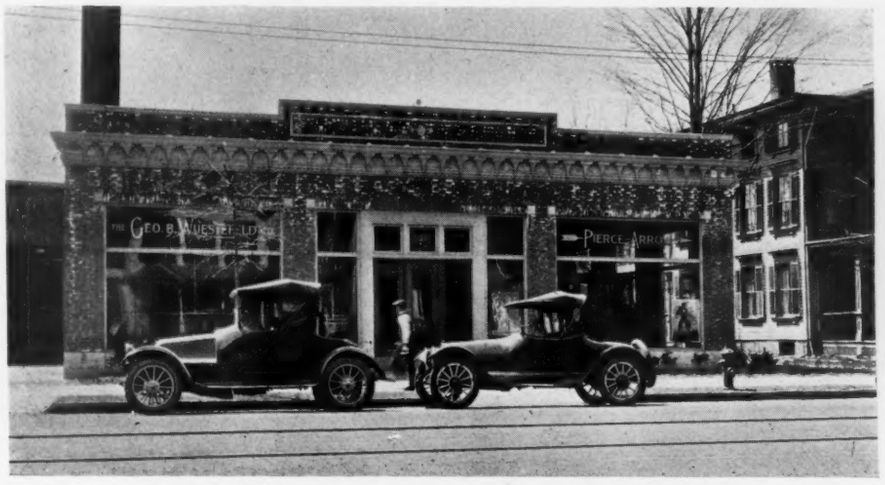
Pierce-Arrow Dealer's Service

One of the several instances where a tire press is being installed, not because of the profits possible in merchandising tires, but because the policy of the company provides for giving the customer satisfactory service, is the George B. Wuesterfeld Company, distributor of Pierce-Arrow trucks in New Haven, Conn. This company, like many others in this city in the past, relied upon outside concerns for tire replacements. After a careful investigation of the tire situation, Edward F. Coogan, superintendent of the company, decided to install a tire press, thus supplying customers with prompt service.

Day-Elder Dealer Handles Tires

Another truck dealer considering the service angle as well as the profits to be derived from a tire press and selling truck tires is the Union Garage Company, Inc., Perth Amboy, N. J. This concern handles the Day-Elder and Vim trucks, and sells the Goodyear and Goodrich solid tires as well as pneumatics. There is keen competition in Perth Amboy in truck tire merchandising yet the Union Garage Company has a tire salesman who devotes his entire time to truck tire sales. This concern believes in the possibilities of truck tire merchandising and devotes one of its windows to a sign for solid tires.

Raymond O'Connor, Bayonne, N. J., dealer now with a truck division in service on the other side, was building up a good business selling truck tires and

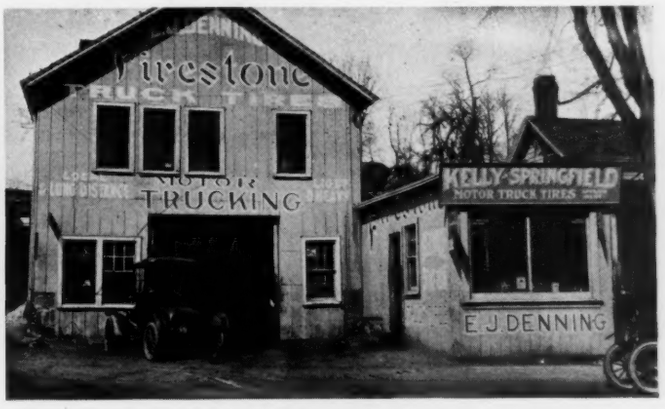


The New Service Station of the George B. Wuesterfeld Company, Pierce-Arrow Representatives at New Haven, Connecticut

This company is installing a tire press to give service to customers

The Union Garage Company, Perth Amboy, New Jersey, Day-Elder Dealer, Merchandizing Truck Tires

Note the tire sign on window of store, which is adjacent to Service Station, and the Goodrich poster



Service Station of E. J. Denning at Stamford, Connecticut, Who Believes in Advertising Truck Tires

The building is to be replaced with a new one especially designed for truck tire service

mounting and demounting them when he enlisted. He installed a Wellman-Seaver-Morgan Company's press in a special tire press room about 40 x 80 feet, also a cement approach from the street, and the installation is noteworthy because he himself did all of the work of preparing the foundation and installing the press. An accompanying illustration shows the layout of the press and band rack.

Garage Dealer Favors Press

The Ossining Garage, Ossining, N. Y., conducting a general garage and repair shop for both passenger cars and trucks, has had a truck tire press in service for over three years and manager Lester says it has proved very profitable. Firestone and Goodyear tires are handled but any make is demounted and mounted if desired. There are about 150 trucks in the territory. The tire press operator and helper are mechanics in the repair shop, this making for low operating cost, as the men swing back to their regular work when not operating the press. This practice is indulged in at all truck dealers' service stations, garages and repair shops with presses.

Another garage that has supplied truck tire service for a number of years is the Holcomb Garage, New Haven, Conn., which concern was formerly in the carriage and wagon business. The manager, Sherman Lee, who is well known as one of the pioneer automobile dealers in the Elm City, not only sells truck tires but does a large and profitable business demounting and mounting for outsiders. If space permitted many other cases could be cited where automobile dealers have developed a profitable business with tire presses.

Analyzing the Investment

The skeptic reading this article may contend that the writer is too optimistic and that he did not make a thorough investigation of the tire merchandising business. It may also be contended that the purchase of a tire press, stocking bands and tires, will require considerable capital, that it is not logical for the truck dealer, that the tire manufacturer is establishing branches, service stations, etc., and that the dealer would not obtain sufficient business to warrant such an investment.

Relative to the first contention: facts, figures, and talks with many dealers handling tires and owning presses showed that good profits are being made and the interviews also revealed that there was keen competition and some abuses. These subjects—competition, sales methods and abuses—will be handled by the writer in another article with suggestions advanced by tire dealers as to how these conditions may be remedied.

Indicating That the Banks Endorse an Investment of the Truck Dealer in a Tire Press
Exhibit arranged by Wellman-Seaver-Morgan Company in conjunction with Cleveland Trust Company

A Potentiality of Fifty Trucks

It is admitted that every truck dealer cannot make a success at merchandising tires. But, whenever there is a potentiality in the number of 50 trucks in his territory (logical prospects) that dealer is warranted in the investment of a tire press and equipment, particularly if he is located in a town or city where the practice is to send the wheels or truck to an adjoining town or city. The dealers in large cities like New York, Boston, Philadelphia and Chicago may have service rendered them, but the writer believes that the day is not far off when the large truck dealer will consider a tire press just as essential to his service policy as a stock of spare parts is for the truck he sells.

The undeveloped possibilities previously referred to may be computed by a little simple arithmetic by the truck dealer. Take a tire list and estimate that the average truck will require four tires the season and the most popular size lists at $74.15. Larger tires regularly used include 40 x 6 at $100.75, and 40 x 7 dual at $125.05. Also figure that a 5-ton truck will use two 36 x 6 in. tires in front and four 40 x 7 in. on the rear wheels, and that the list price of the set is $584. Or figure the list price of the average tires used and multiply by 50, the potentiality. Subtract the 5 per cent. discount for cash the customer is entitled to or more if he be a fleet owner, then deduct the cost of the tires by taking the discounts not given herein.

Determining Costs

Charge against the investment the cost of the press, motor and installation, interest on the same and money invested in bands and tires, figure the cost of the power, labor and overhead. The last named are small because a press is not operated ten hours the day. If you do not care to estimate the expenses write a tire press and tire concern and they will supply you with some concrete and very interesting facts. In either case it will be found that a net profit of from 10 to 20 per cent. is possible, to say nothing of the advantages obtaining from the service afforded the truck user.

Sold on Deferred Payments

The dealer, if he desires, can obtain a tire press on the deferred payment plan, details of which are supplied by the makers. The service of the tire press maker is most complete and not only are instructions supplied for installation and operation, but an expert is supplied to teach those who are to operate the press. The operation of a press, demounting and mounting tires, is easily mastered by the average workman in the repair shop or service station.

That the banks consider the tire press a safe investment for the truck dealer is indicated by a demonstration of their operation recently given by the Wellman-Seaver-Morgan Company, at Cleveland, O., in conjunction with the Cleveland Trust Company. Although the exhibit was scheduled for a week, it was continued the second week as the special request of the bank. An accompanying illustration shows the exhibit as well as indicates the interest of the bank in the industrial reconstruction in which the motor truck is to play an important role.

The exhibit attracted a large number of truck dealers who for years have not taken a broad view of their merchandising opportunities, and who have lacked vision because they have concentrated on selling trucks only. Many dealers fail to appreciate the consumer demand in several fields on undeveloped possibilities and the tire press and truck tires represent but one of several opportunities. Truck tires are a standard article and afford the truck dealer an excellent chance to develop a separate and very profitable department. Will he be content to follow the lines of least resistance or will he turn his attention to the developing of lines already too long neglected?

Tire Press is Necessary Machine to Dealer in Cushion Tires for Motor Trucks

Dealer Who Has to Depend on Press Owned by Competitor is Handicapped. H. G. Root Company, of Columbus and Springfield, Find That Quick Service is Great Business Builder

By A. V. COMINGS

DEALERS in motor truck tires who attempt to build up a big business without a hydraulic tire press as part of this service equipment, are working under a serious handicap, according to the H. G. Root Company, of Columbus and Springfield, Ohio. This company maintains a press of maximum capacity in each of its tire service stations, and the business that the company has built up in each city, through being able to give instant service, has proved the necessity of having this piece of machinery where business growth is the desired end.

F. B. Woosley, vice-president of the company and manager of the Columbus store, is rather proud of the solid tire business his branch is doing, and well he may be, for the big tire press is kept busy most of the time changing tires on trucks that depend upon this store for their tire equipment.

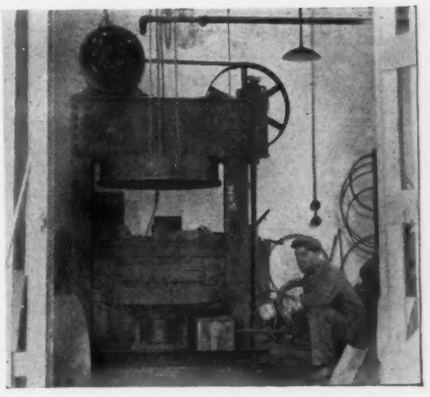
A portion of the Root service station in Columbus is divided off from the main room by a partition, for the exclusive storage and application of truck tires. A $12,000 stock of tires is kept here at all times, running from the smallest to the largest of the cushion tires made by the Firestone company.

In one corner of this space is placed the big tire press, convenient to the stock, and a minimum of time is consumed in replacing worn out tires with the new ones.

In fact, "instant tire service" is the Root slogan, and the motor truck that is on a big job, where minutes mean dollars, is assured of quick change, because of the fact that the Root company owns its own press and is able to make the change without consulting some factor outside its own organization.

If it is inconvenient for the truck needing a change of tires to be brought to the Root service station, a Root service car is sent after the wheel on which the change is to be made, and the new tire is applied and the wheel returned with a minimum loss of time.

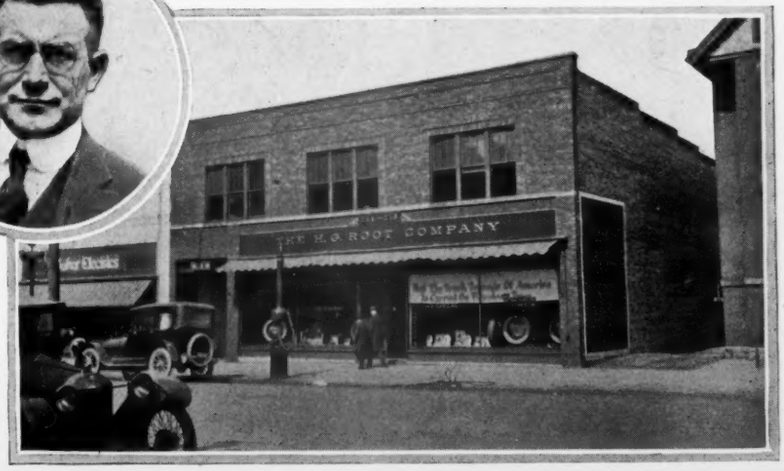
The Root company does not wait for truck owners to find out that its press is at their service. The company keeps two salesmen on the job all the time in the Columbus territory, and these men call on every truck owner at least once every thirty days, inquiring into his needs, giving him tire advice, and, if he is in the market for new tires, selling him just the best suited to his truck. The company believes in maintaining personal contact with its patrons, and as a result of constantly being on the job its salesmen are building up a clientele among the truck owners of Columbus that results in big business. The Springfield sales are handled in much the same way. In addition to personal calls by its salesmen, each truck owner is circularized one way or another two or three times a month, between January and September. The company sends out a blotter to each on the first of the



Big Tire Press in the Root Service Station at Columbus, Ohio. A Similar One is Used in the Springfield Branch.

J. L. Zismer, Manager of the Springfield Store

Below: F. B. Woosley, Vice-President of H. G. Root Company, and Manager of Columbus Branch



month, with a tiny calendar covering the month printed on the back, with the company's advertisement. Newspaper advertising is also used, and the company maintains billboards conspicuously in its Columbus and Springfield territory, including a string of them along the 45-mile road from Columbus to Springfield.

Spring is the busy time for the cushion tire companies, for motor truck owners do not buy any more tires than they absolutely have to during the winter months, for chains and icy roads play havoc with them. They make the old tires last till spring if there is a possible chance.

The Root company has turned all its advertising over to an advertising agency, which prepares its circulars and newspaper copy in an expert manner, the result being that the advertising gets good results.

Motor Transport Day Parade Demonstrates Possibilities of Truck Transportation

DETROIT, May 20.—The interest in inter-city hauling awakened by the parade held in Detroit on Motor Transport Day, has well repaid those responsible for the demonstration.

Seven hundred trucks were in line and in keeping with the purpose of the parade there was no one afoot. The parade was headed by a motor car in which rode Mayor Couzens of Detroit, and Major General Haan, followed by another car in which Governor Albert E. Sleeper rode with Grand Marshal William E. Metzger and Edward N. Hines, president of the Detroit Automobile Club.

The first section of the parade was headed by Dodge Brothers band of 70 men on a huge truck and trailer. Then came the motorized equipment used by the city of Detroit, with fire trucks and huge trucks and trailers used in garbage removal and flushing the streets.

Following the city's vehicles came 100 units of the Detroit Transportation Association, including those trucks actually engaged in the inter-city freighting business. Many of these carried actual loads that pass over the roads of Michigan every day in the week.

A big fleet of the United States army trucks from Fort Wayne under control of Lieutenant Turner took part in the parade with several of the five-ton army tractors, the output of the Maxwell Motor company. A series of floats entered by the Detroit Automobile club blazoned the "Safety First" idea which is to be the object of a big educational drive to be conducted in Detroit for the next 30 days.

Two big Goodyear freighters, which arrived in Detroit from the Goodyear factory at Akron with a load of tires for the local branch, were immediately turned over to participate in the demonstration.

The Packard Motor Car Company was represented by a comprehensive display in which the first Packard truck ever manufactured occupied a prominent place. The Packard band preceded its own section.

The Commerce Motor Car Company entered a war truck and numerous other trucks in commercial use showing a comprehensive assortment of hauling requirements.

Dodge and Reo entered light delivery wagons and Federal, both light and heavy duty trucks.

E. Foster Moreton, president of the Detroit Transportation Association, put two heavy draught horses on a big three-ton "job," signifying the passing of Dobbin as a transportation unit.

Both Firestone and United States Tire companies exhibited striking floats advertising the idea of equipping trucks with pneumatic tires.

G. M. C. trucks afforded a concrete demonstration of the carrying possibilities of trucks of varied capacity, with Owen & Graham as the exhibitors.

Arrangements for the day were in the hands of a parade committee consisting of W. Colburn Standish, C. L. Owen and C. E. Stone, while the Detroit Transportation Association end was handled by F. L. Henk, managing secretary.

Among those on the reviewing stand were Harry G. Moock, business manager of the National Automobile Dealers' Association, and F. W. Fenn, secretary of the motor truck committee of the National Automobile Chamber of Commerce.

Interstate Commerce Commission Prescribes New Form of Bill of Lading

NEW YORK, May 20.—The Interstate Commerce Commission by a decision rendered in the "Bill of Lading Case" clears up many points of contention between shippers and carriers by outlining what should properly be printed in bills of lading. These documents constitute the contract between shipper and carrier and the Commission's decision holds the carriers very closely to common law, eliminating many conditions that would tend to release the carriers in various respects from liability.

Concerning the paragraph attempting to release carriers from liability when property is transported on open cars, the Commission states:

"We are of the opinion that the exemption stipulated for in the present and proposed bill is too broad and too greatly favors the carrier to be entirely just and reasonable. Moreover, we think that it falls within the provisions of the Cummins amendment so far as it seeks to exempt the carrier from the liabilities with which it would be charged under the common law. To that extent it would be invalid and void. To the extent that the carrier would escape liability at common law, stipulation is unnecessary. We shall therefore not approve either the rule proposed by the carriers or the substitute offered by the shippers for inclusion among the conditions."

Consequently the form approved by the Commission contains no reference to the liability on such shipments.

The decision condemns as unlawful and void, with respect to domestic bills of lading, the rule fixing the measure of liability as the invoice value of goods at time and place of shipment and directs its complete elimination from the proposed bill.

Carriers are required to adopt the bill of lading prescribed by the Commission on or before August 8, 1919.

Council of National Defense Institutes Safety First Campaign

The Council of National Defense through its Highways Transport Committee is putting on a nation-wide campaign to the end that suggested Uniform Police Traffic Regulations and Directions be adopted by the municipalities of the country. This campaign is a result of the alarming number of accidents occurring on the highways, especially since the introduction of motor vehicles.

In the interest of both life and limb as well as from an economic standpoint, which touches the motor industry, some concerted action seems to be necessary if the number of accidents be reduced to the extent that they should. The courts have estimated the value of a life at $10,000. In the City of Washington, as an instance, the death toll as last officially announced was at the rate of eighty-two per year. These figures speak loudly and emphasize the need for immediate action.

The suggested regulations and directtions being sent out by the Council of National Defense have been prepared under the supervision of William P. Eno. They were submitted before final revision for constructive criticism to secretaries of state, state highway commissioners and engineers, judges and lawyers, publicists who have given close study to the traffic question; traffic authorities in some of the larger cities, the American Automobile Association, the National Automobile Chamber of Commerce, the Highways Industries Association, the National Highways Traffic Association, and to individuals in large numbers.

The real end sought by this campaign is the education of both drivers and pedestrians, that they may make decrease of traffic accidents possible through observance of instructions given them in the suggested regulations and directions.

Is Short-Haul Work With Trucks Profitable Where Common Carriers Afford Good Service?

Operations of Connecticut Truck Dealer Prove That Trucks Can Successfully Compete and Make Money. Success Due to Simple Method of Cost Accounting and Computing Work

By C. S. PERRIE

CAN a fleet of trucks be operated at a profit where the work is varied in character and includes short hauls and where there is keen competition? Many will answer no and cite numerous instances where truck operators have failed to make even expenses when undertaking short haul work, particularly where the territory was well served by common carriers, including the horse-drawn vehicle.

Now and then we find an owner of trucks operating at a profit under the conditions described, and while it is true that no one particular system can be applied generally and obtain exactly the same results, the fundamental principle is applicable, and that is knowing your costs; not only the cost of the trucks, but that of handling all types of work under all sorts of conditions.

Why Operators Lose Money

In other words, too many operators of trucks, while possessing or rather keeping, operating costs, frequently lose out when estimating on material requiring careful handling in loading and unloading, as well as in transportation. Of course, if the work is computed on an hour or day basis the operator, if he has accurate cost figures, is not as likely to make an error as he would if he is asked to submit a figure for handling the entire quantity, or even to figure on the tonnage or even ton-mile basis. And invariably the shipper prefers the last named method, for then the truck operator shoulders all losses incurred by too low an estimate or delays. This is particularly true in the larger cities where the delays at the freight terminals and boat piers are frequent.

Losses Incurred Through Delays

For example: In New York City a certain new transportation company made a contract to haul so many tons of goods to a steamboat pier in New Jersey, which necessitated use of a ferry. About the time the work was well under way a strike occurred that greatly reduced the ferry facilities. The result was that the trucks stood in line for hours waiting their turn. Now the manager of the transportation company had made a low estimate on the job because of the tonnage and his contract did not contain any clause relative to delays because of strikes, etc. The shipper wasn't interested in the manager's troubles. The result was that the truck company lost money in completing the contract, which loss would not have been incurred had not the truck company been new at the business and lacked cost figures of the particular haulage conditions. Of course if the work had been estimated on an hour or day basis the shipper would have swallowed the loss, but as pointed out, shippers prefer a fixed charge.

In this specific case the trucking company lost out because of what may be termed abnormal conditions, but it is not infrequent that the man new to motor transportation experiences similar results under normal conditions because he inaugurates a scale of prices based on the charges of some well established trucking company, but where the new operator makes his mistake is that he does not know that his own costs on the particular work may be greatly in excess of those of his competitor.

Costs vs. Costs

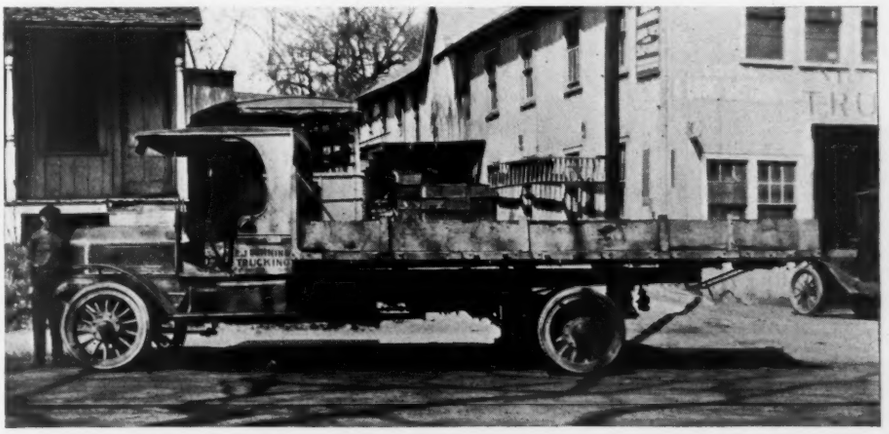
While the new operator must accept some figures as a basis for computation until he obtains actual cost figures, he is generally misled by those supplied him, particularly if the costs are not those dealing with the particular work. In defense of those supplying the initial cost figures it must be said that they are not compiled with a view of selling the prospect—far from it—but being frequently based on averages may not be applicable to the work contemplated by the new operator, or conditions under which the truck or trucks operate. There are many angles to the problem, and one could go on at great length defining reasons for failures.

Among the owners and operators of a fleet of trucks making real money in doing general hauling and many short hauls at that, is the case of E. J. Denning, of Stamford, Conn. This small city is located on the main highway between New York and Boston, or what is known as the Shore Route. Stamford is 35 miles from New York, 23 from Bridgeport and 40 from New Haven, a territory honeycombed by manufacturing concerns obtaining their raw material and shipping the finished product considerable distances. The territory is well served by common carriers and numerous motor transportation companies, to say nothing of the local service.

How Costs Are Computed

Yet despite this competition Mr. Denning, who began with one truck a few years ago, is profitably operating a fleet of ten trucks, and his profits, particularly during the past three years, have been such as to be of interest to the Internal Revenue Collector. Mr. Denning is making money with his fleet of trucks, because when he gives an estimate on any particular job he knows to a penny what his costs will be, and the figures are not compiled on averages, but on what it has cost to do the same or similar work. Cost figures plus a reasonable profit coupled with a personal supervision, are the factors responsible for his success, and he must be adjudged a success for his credit is A1 and his bank account large, and there are no outstanding bills.

Mr. Denning merchandises trucks, representing the Mack line in his territory, and one of the best selling talks he uses is the machine shown in an accompanying illustration. This truck, the veteran of the fleet, has traveled no less than 45,000 miles at a low cost per mile, and is still a big bread winner of the

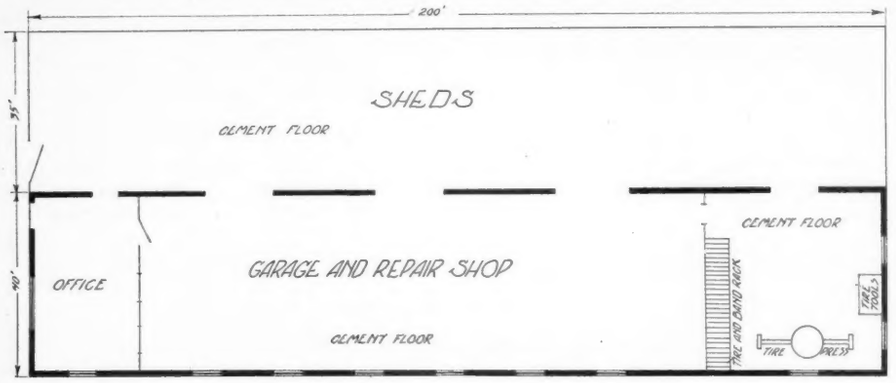


This Five-Ton Mack is the Veteran of the Fleet, and Has Forty-Five Thousand Miles at a Low Cost Per Mile to Its Credit

Ed. Note—Details of the truck tire business handled by Mr. Denning are described in an article on page 7, dealing with the merchandising of truck tires by the truck dealer.

truck family. The balance of the equipment includes trucks ranging from three-quarter to 4 tons capacity, and three AC Macks, two of which have dump

Mr. Denning has been actively engaged in general hauling for the past four years, and ascribes his success to knowing exactly what it will cost to haul any material under any condition a long or short distance with a light truck, or one of 5 tons capacity. While it is true that his experience with motor transportation did not begin at Stamford, he having served as transportation manager for a number of years in larger places, he did not utilize the cost figures of these places for Stamford, but compiled a new set, one adapted to local conditions. He did, however, employ his knowledge to arrive at initial cost, but provided a factor of safety which his experience taught him was absolutely essential. In other words, the principle involved was that it is easier to reduce prices than to advance, notwithstanding the general tendency to advance all costs of late.



Plan of the New Garage of E. J. Denning

He conducts a general transportation business and merchandises truck tires and accessories in Stamford, Connecticut

Cost Data for All Work

The secret of Mr. Denning's success is, briefly, that he has kept and still keeps an accurate record of all work performed by his trucks, and the system is a simple one, consisting as it does, of a driver's sheet or slip as shown. As may be noted, the form affords the necessary information, such as character and amount of goods hauled, trips, time required, helpers, fuel, oil, etc., and this data is not only entered, but it, with the day slips, are so cross indexed that Mr. Denning can readily ascertain the cost of hauling a commodity under certain conditions. The price or estimate, whether it be by the hour, day, tonnage, ton-mile, etc., is also accessible. It matters not if the cost of labor, fuel, oil, etc., has advanced since a similar haul or job was done, for it is a simple matter to add the difference to the original cost in making an estimate.

The advantage to a truck operator of having data instantly available is demonstrated by the working of Mr. Denning's plan. A manufacturer in Stamford desired a certain commodity that is transported in drums weighing 900 lb., hauled slightly over a mile on a contract basis. Ordinarily the truck operator, not having experience with this commodity, would base his estimate on general conditions. Not so Mr. Denning, for he recalled that although it was some time since he handled any similar work, that it had unusual features, so he looked up his data and found that the material had to be handled gently, that it took considerable time to load and unload, as well as extra helpers. It was an easy matter to figure the costs, plus a profit, and supply an estimate for the work.

Many owners of fleets claim they have difficulty or cannot make the drivers keep the information essential to such a cost system, but Mr. Denning will not experience this trouble. Note "he will not," not "he does," for he lays down certain rules for his drivers to follow and they are either followed, or the driver "severs his connection." The Denning drivers are well paid and speak highly of their employer. They work 10 hours a day and are well paid for overtime. They are held responsible for the condition of their trucks, and failure of a component to work properly is reported on the slip above referred to. A skilled mechanic keeps the trucks in condition, giving attention daily to the written reports of the drivers. There is no "passing of the buck" if an accident occurs through failure of attention to a part.

E. J. DENNING

Date _____ 191

Truck No. _____

Worked for _____

Hauled _____

From _____

To _____

Loads _____ Tons _____ Trips _____

Mileage _____ Gas. gals _____ Oil qts. _____

Hours _____ Helpers _____

Condition of Trucks _____

Remarks _____

Driver _____

Foundation of the Cost-Keeping System Employed by E. J. Denning

The driver fills in details, which are entered in book, and by means of a cross-index, costs of any work may be readily obtained when estimating.

A Profit or No Work

Anticipating the question of how Mr. Denning is able to operate his trucks profitably in a small place where competition is naturally keen, it is explained that he gives personal attention to the contemplated job and compiles his own cost estimates, to which he adds a reasonable profit. If he cannot make a reasonable profit he will not cut his price for the sake of keeping his trucks busy, an error frequently indulged in by the newcomer in motor transportation. Because of his experience and cost data Mr. Denning is able to avoid losses and working at cost, factors responsible for the statement sometimes made by truck owners that profits are overestimated.

In addition it may be said that the business warrants the construction of a new garage which is to have unusual features and will occupy a plot of ground 75 x 100 ft. The arrangement is to care for the solid tire business handled by Mr. Denning and comprises a space 35 x 200 ft., covered by a roof for storing the trucks while the tires are being renewed. Entrance is either through the gate or office, and the gate is always kept locked except when a truck is entering or leaving. The entrances to sheds and floors are to be of cement. In addition to selling truck tires Mr. Denning handles standard accessories.

Rural Trucking in Kentucky

A liberal road improvement program is adding materially to the interest in and possible widening of the truck service in Kentucky.

Dairymen and truck farmers are using trucks to bring their products to market. Instead of hauling his milk or produce to the nearest railway station to be shipped into the city the farmer completes the job himself at one trip by covering the whole distance by motor truck, and he does it just about as easily as he used to make the trip to the station with his wagon.

So far the effect seems to be more to take from than to supplement the railway traffic. At points distant from the city trucks are used somewhat for bringing products of distant farms into the nearest town for rail shipment, but the main trucking so far is competitive to the steam railways and interurban electric lines, and it is proving so successful as to portend a great change in the near future. It begins to look as if the short freight and express hauls will be taken over mainly by trucks, and that this business will be lost to the railroads.

Upon the success of the road program depends to a great extent the proposed establishment of trucking routes in the rural district, which movement is receiving earnest attention at present.

Sell Your Trucks at a Profit and Give Service*

EVERY man is entitled to a profit for his labor and capital. In fact, what a great many dealers in motor trucks have to pay for the joy of being in the business is directly the result of following the lines of the least resistance and duplicating the mistakes of competitors, instead of fighting for what they know to be good business principles.

Now, understand, I am not here to criticize unless I can make constructive suggestions, and if there should be anything in my remarks which seems personal, kindly remember that I am dealing with the subject in a broad way, with the hope that I may scatter a few seeds which—with the co-operation of you gentlemen—will grow and become a harvest of profits for the motor truck dealer.

First, I want to say that Lancaster is not the only good American city where the truck dealer is counting his chickens before they are hatched. It has been my good fortune to have been identified with the automobile industry since its inception, and prior to that I was reared in the bicycle industry; therefore, the question of selling merchandise through dealers on an agency basis where commissions have run from 15 per cent. to 30 per cent. is one with which I have been familiar for many years. I mention this fact because I want you to know that I am speaking from experience, and that what I say is based on practical experience over a long period and is not the result of salesmanship theories.

Cutting Price Kills Buyers' Confidence

You can either give service or cut prices. If you try to do both you cannot stay in business, and the buyer would not take your trucks at even a 20 per cent. discount if he thought you were going to close up shop at an early date. The trouble with too many automobile agents—especially those who sell commercial cars—is that they are intimidated by the buyers who hold over them the bug-a-boo of what their competitor is going to do in the way of cutting prices.

Let me give you a word of advice—don't spend your time trying to shut out your competitor at any price. Any price means the price you will pay for the failure.

Why did the most successful motor truck manufacturers in the United States—the big automobile companies—earn a reputation and become the envy of all the others in the industry? It is not because they have had a cut-price policy. The very agencies you would prefer to have would be for cars which you know stick to the list prices. Do you want any better proof that the way to succeed is to sell at the list price and give service?

The desire to get orders is something which is uppermost in the minds of all men who have merchandise to sell, and the fear of seeing that order go to the other fellow creates a mental condition which at times makes the salesman panicky. It is under this stress that the buyer stampedes the seller and the salesman capitulates.

How often have you, within a day after you have made a sale, taken yourself to task and felt that you have made a mistake and the buyer was a better man than you? That is an important question, but a more important one is—How much longer are you going to let this condition prevail and how much longer are all you truck dealers going to continue to let the buyers be better men than you?

You are not in business for your health, I hope; although I certainly trust that the motor truck business won't break down your health. Work does not kill, it is worry that pulls the props from under a man, and every motor truck dealer who is doing business today on an unsound basis has ample reason for worry.

It is a great idea to figure that if you sell fifty trucks for $2000 apiece you do $100,000 worth of business, and if the difference between the list price and the price to the dealer is 20 per cent., that you make $400 a truck, or $20,000.

Straightway you figure what your sales are going to cost you and your office overhead, and service, and you find you have a net profit at the end of the year of $10,000. Fine! You had the right idea in the first place in figuring you were going to make $400 a truck, but you soon got the wrong idea. You started to sell the truck at 10 per cent. off, because you said to yourself you could go fifty-fifty with the buyer and still make 10 per cent.

Down go your gross profits from $20,000 to $10,000, and you have put a hole in the hull of the ship which will soon sink her; but that is not all you've done. You have figured to sell fifty cars and you have taken twenty-five in trade, so you are selling seventy-five and have increased your sales cost 50 per cent.

Trade-ins Should be Discouraged

As to trade-ins, if cars are taken as part payment, a rule should be made that the trade-ins represent the profit. That is, the payment should equal the cost of the new truck. It is interesting to note that many truck dealers have discontinued the practice of taking any vehicle in part payment.

Every time the dealer sells a truck at a cut-price he is committing commercial suicide and actually helping to drive the manufacturer out of business.

Every time a dealer offers his manufacturer's truck below list price, which the manufacturer may have advertised extensively and expensively, he is robbing him of his good name. The manufacturer is very much injured by cut prices. He should be the sole determiner as to the retail price at which the truck should be sold. Why? Because in the past dealers were held largely responsible for the goods they sold, but now the manufacturer is looked upon as the responsible one, and if his reputation is not to be tarnished in any way, he must insist that his dealers be fair and sell his trucks on a one-price basis.

Every time a dealer sells a truck at a cut price he is misleading and deceiving the public, because he intends to make it up if he can, and the place he is most likely to do it is in the service and parts department. The buyer on whose truck he did not make any discount is exceedingly sore when he learns that others have been given preference. Finally the dealer will no longer be in position to demand the list price because buyers will have come to believe that the cut price is the real list price. * * *

One of the things which is wrong with the motor truck industry today is the fact that petty jealousies, plus fear that a competitor is going to get the order, have stampeded most of the truck agencies in the United States and they are giving away their gross profits, which prevents a net profit and consequently prevents service. The great mistake so many men in business make is to sacrifice profits for the sake of volume. How frequently we are brought face to face with a condition which proves that a man selling 25 motor trucks on a safe and sound basis at the end of the year has a profit, while the man who has sold 100 on a cut-price and ruinous trade-in basis is in debt. * * *

I think it is safe to say that every motor truck dealer here is convinced that he is entitled to a profit and that he ought not to sell cars at cut prices nor take trucks in exchange unless he can make his full profit on his own car and a small profit on the other car to care for the expense of handling.

Now if you have these convictions, why don't you all get together and adopt such measures as will let you have the courage of your convictions and stand shoulder to shoulder and show the same spirit as our good old doughboys in the Argonne. Then you can rout your worst enemy, just as they routed the Hun. * * *

Now as to the few suggestions which I earlier in the evening said I would like to make—helpful suggestions to offset any criticisms—I would say that you are starting off right by having an organization. Now let every meeting you have for the next six months include under the heading of "New business:" "Cut-prices and Trade-ins."

Let the men who are the most courageous take hold of this anti-cut-price business first, get after the other men who are afraid to adopt a policy contrary to the way they have been doing business. Let there be real, forceful discussions on the subject first; but second—by all means act.

There was one speaker at the recent convention of the Motor Truck Sales Managers in Philadelphia who made one

*Extracts of address made by C. A. Musselman, before the Lancaster Motor Truck Club, of Lancaster, Pa., on May 27th.

of the most intelligent remarks that I have heard in some time. He said: "Here we are, gathered from nearly all the states in the Union. We listen to wonderful suggestions, but what do we do? We carry them home as pleasant memories and nothing is done because we each wait for the other fellow to act."

Now it is not possible for every man here to act in accordance immediately with this suggestion, but it is possible for those of you most vitally interested to fill the leaking holes at once and save the ship from foundering. Those of you who are most vitally interested should see to it that other members of your association do likewise, because they can put the business on a sound basis where all members can make a profit.

If they do not follow your example and you go back to cut-price methods, the men who have been unwilling to do business on a firm basis will be the first to go by the board. You have to take the bull by the horns if you want to stay in the motor truck business and make money, for it is absolute folly to cut your prices to the point where you sell two trucks for the price of one and expect to get anywhere with such a policy.

Dunham, Carrigan and Hayden Co., San Francisco and New York, is planning to enlarge its automotive supply department. W. L. Tibbals, formerly with the Chanslor and Lyon Co., is in charge of purchasing in this line.

Traffic Association Discusses Highway Problems

NEW YORK, May 16.—Among other interesting subjects discussed at the annual meeting of the National Highway Traffic Association, which held a joint conference with the Reconstruction Commission of the State of New York, on May 14, were Rural Motor Express, highway engineering and good roads. J. H. Collins, Highways Transport Committee, Council of National Defense, and investigator of Market Surveys, U. S. Department of Agriculture, gave a most interesting and practical description of the method of making a survey for a Rural Motor Express route. He pointed out conditions making for success or failure and advised a careful analysis of the territory, its products, shippers other than farmers, and the development of capacity loads both ways. Among other things he said was that the aid of county agents should be sought.

F. W. Fenn, of the N. A. C. C., spoke on the development of Rural Motor Express throughout the country. Elmer Thompson, secretary of the Automobile Club of America, discussed the need of sign posting on highways, detours and in cities, stating that it would greatly facilitate transportation.

Following the afternoon session officers were elected as follows: Arthur H. Blanchard was re-elected president and David Beecroft, vice-president. George H. Pride and Elmer Thompson were re-elected treasurer and secretary respectively.

At the evening session President Blanchard gave an illustrated address on highway transport engineering and was followed by H. G. Shirley, secretary, Federal Highway Council, who explained in detail the plan of the organization, benefits to be derived by National highways and gave concrete examples of the disadvantages of state control.

Control of traffic on feeder highways was discussed by Edward J. Mehren, editor, Engineering News-Record, who pointed out the need of restricting or regulating the weight and speed of trucks. He was ably answered by George H. Pride, who stated that the solution of the problem was not penalties for speed and overload, which were violated daily, but the construction of suitable roads. The conference concluded with the first showing of "The Open Road to a Greater America," a film indicating the high cost of bad roads and the advantages of motor transport.

"Our railways and waterways cannot attain their fullest efficiency unless we build efficient highways."

Activities of the Motor Truck Association of Philadelphia

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COMMERCIAL CAR JOURNAL OFFICIAL ORGAN

The last monthly meeting of the season of the Motor Truck Association of Philadelphia, prior to the summer recess, was held in the Hotel Adelphia, on Wednesday evening, May 21, and a number of specially attractive and instructive features were given.

The principal address was made by A. R. Kroh, of Chicago, formerly a truck distributor and also a practical farmer in Texas. He made a spirited address on "The Use of Pneumatic Tires on Heavy Duty Trucks." Mr. Kroh criticized the method of selling trucks below list price, either for cash or on trade, and said that the stability of the business depended on sticking to list price. He also criticized propaganda on Good Roads and Return Loads, stating that such publicity prevented many prospective truck buyers from purchasing, and claimed that if the trucks are sold good roads and return loads will follow.

He urged the truck dealers to go after the farmers, claiming that the greatest market lay in that direction. He cited instances of where a motor truck had made three and a half trips to market from the farm where one and a half trips only were made by team. He also advocated the use of large pneumatic tires instead of solid tires, for trucks obliged to travel over soft dirt roads, claiming that more mileage and greater speed would result. He said that there are 1,500,000 farmers ready for trucks today if they are convinced that they are practicable.

Joseph P. Gaffney, chairman of the Finance Committee of Councils, declared that what Philadelphia city and county needed was not a reformed charter, but a new constitution for the whole state. He explained how, with the number of commissioners of different departments, that the power of the Mayor and Councils, as the actual administrators of the city, was almost nullified.

Mr. Gaffney also declared there should be a readjustment of the license fees paid by automobile owners so that a substantial portion should be returned to the different cities and counties for the upkeep of their streets instead of the amount being used by the state.

C. A. Musselman spoke on "The Readjustment of Labor Conditions," and predicted that with the continuance of high wages the next ten years will prove the most prosperous this country has ever witnessed.

Final arrangements were made for the annual outing of the association, which will be held at Kugler's Mohican Club, on the Delaware River, on Saturday, June 21, and a challenge was accepted from the Camden Automobile Trade Association and Automobile Accessories Business Association to a baseball game on this occasion.

Resolutions were adopted upon the recent death of W. E. Hoover, of O'Brien & Hoover, an active member of the Association. It was also decided to protest to the Government against the ruling classing motor truck chassis as automobile parts, and subjecting them to a 5 per cent. tax.

J. E. Miller, chief chemist of the Barber Asphalt Co., gave an interesting talk on "Good Roads," illustrated by moving pictures. Thomas K. Quirk, president of the Association, presided at the meeting, which was attended by more than 250 members.

Tax Regulations on Truck Chassis and Accessories Modified

NEW YORK, June 3.—Confirming the telegram sent to members of the National Automobile Chamber of Commerce, the Treasury Department at Washington has issued certain modifications and additions (approved May 31) to regulations No. 47 under section 900 of the Revenue Act of 1918, relating particularly to the taxes on truck chassis and also to taxes on parts or accessories sold to manufacturers or producers of complete vehicles. Copies of this (Treasury Department No. 2852) have been sent to Collectors of Internal Revenue.

The Treasury Department officials were impressed with the fairness of the requests for changes that were made by the various organizations in the industry, including the National Automobile Dealers' Association, Motor and Accessory Manufacturers' Association, Rubber Association of the U. S. A. Automotive Equipment Association, N. A. C. C., other associations and the individual manufacturers and dealers.

Following are the sections of T. D. 2852 which affect automobile industry:

"Article 6 of Regulations No. 47, entitled 'Credit for taxes already paid,' is hereby modified by adding at the end thereof a paragraph as follows:

"The following records and evidence will be deemed sufficient to establish this right of exemption: (1) any record or statement showing the exact amount of tax paid upon such articles; (2) a certificate or statement of the following tenor:—'The undersigned hereby certifies that the articles on which credit for tax is claimed were taxpaid and that said articles were used by ..... in the further manufacture of other articles taxable under Section 900 of the Revenue Act of 1918.

Signed.....'

Exchanges Pursuant to Guaranty

"Where any article taxable under Section 900 is returned to the manufacturer thereof, for adjustment, replacement or exchange, under a guaranty as to quality or service, and a new article given pursuant to a guaranty, free or at a reduced price, the tax shall be computed on the actual price, if any, to be paid to the manufacturer for the new article.

"Article 14 of Regulations No. 47, entitled 'Tires, inner tubes, parts and accessories sold to manufacturers,' is hereby modified to read as follows:

"Subdivision (3) of Section 900 of the Act exempts from tax sales of tires, inner tubes, parts, or accessories to a manufacturer or producer of automobile trucks, automobile wagons, other automobiles, motorcycles, tires, inner tubes, parts, or accessories. To come within the exemption the sale must be to such a manufacturer for use by him in the manufacture or production of automobile trucks, automobile wagons, other automobiles, motorcycles, tires, inner tubes, parts or accessories or for sale by him on automobile trucks, automobile wagons, other automobiles, or motorcycles or in connection therewith or with the sale thereof or for free replacement under contract or guaranty. If sold to such a manufacturer for any other purpose, such as resale to a dealer or for the rebuilding of used cars, the sale is taxable. In order for the sale to come within the exemption of the statute, the manufacturer must at the time the goods are shipped or sold (which ever is prior) have in his possession an order or contract of sale, with certificate of the purchaser in writing printed thereon or permanently attached thereto, showing that the tires, inner tubes, parts, or accessories so purchased are to be used in the manufacture of new automobile trucks, automobile wagons, other automobiles, motorcycles, tires, inner tubes, parts, or accessories or for sale on automobile trucks, automobile wagons, other automobiles, or motorcycles or in connection therewith or with the sale thereof or for free replacement under contract or guaranty. Following is a form of the certificate or statement which will be accepted:

Form of Certificate

"The undersigned hereby certifies that the tires, inner tubes, parts, or accessories purchased hereunder are purchased with the intention of using them in the manufacture or production of automobile trucks, automobile wagons, other automobiles, motorcycles, tires, inner tubes, parts, or accessories, or for the sale on automobile trucks, automobile wagons, other automobiles, or motorcycles, or in connection therewith or with the sale thereof, or for free replacement under contract or guaranty. In case any of the tires, inner tubes, parts, or accessories sold hereunder are diverted from this use, the purchaser will account for such tires, inner tubes, parts, or accessories to..... ....., the manufacturer thereof, at least once during each calendar year and will pay the tax thereon to him at the time such accounting is made.

Signed....."

"If it is impracticable to furnish a certificate for each order a certificate covering all orders between given dates (such period not to exceed a month) will be acceptable. If in any case such an order and certificate cannot be produced on demand of any authorized agent of the department the tax in respect to the sale will be considered in default.

Truck Chassis Tax

"Substitute in place of the next to last sentence of Article 15 of Regulations 47, which reads as follows:

"A chassis is a part of an automobile and taxable at the rate of 5 per cent. when sold separately regardless of whether it is a chassis for an automobile truck or wagon or for any other kind of automobile."

the following:

"A chassis provided with a superstructure of such design that it is without substantial additions adaptable for hauling heavy loads is an automobile truck or automobile wagon and taxable at the rate of three per cent. A chassis not so equipped is an 'other automobile' taxable at rate of five per cent. Unless the manufacturer has actual knowledge that the chassis is to be used as an automobile truck, or automobile wagon, or has in his possession at the time the chassis is shipped or sold (which ever is prior) an order or contract of sale with a certificate of the purchaser in writing, printed thereon, or permanently attached thereto showing that the chassis specified in the order is to be so used, the tax shall be five per cent. upon the manufacturer's selling price.

"Article 34 of Regulations No. 47, entitled 'Manufacturer also Retailer' is supplemented by adding a new paragraph to read as follows:

"In cases where it is impracticable to compute the tax in respect to articles sold at retail on the average wholesale price, for which like articles were sold during the previous calendar month, the taxpayer has the option of basing the tax upon the ordinary or regular wholesale price for which like articles were sold during the previous calendar month."

Important Points of Regulations Interpreting the War Excise Tax on Automobiles

The National Automobile Chamber of Commerce has issued General Bulletin No. 298-A interpreting Regulations No. 47, relating to excise taxes on automobiles.

1. The Revenue Bureau has just issued Regulations 47, relating to the excise taxes. Under the statute these have the force of law and not only apply to the future but are retroactive to February 25, 1919. So the manufacturers, in making their returns and paying the tax at the end of this month must compute it according to these regulations.

2. We call particular attention to Article 14, which in brief provides that the maker of tires, inner tubes, parts and accessories is taxed five per cent. of his selling price on all his sales except those made direct to the manufacturer or producer of automobile trucks, automobile wagons, other automobiles or motorcycles. This exception will not be granted unless the manufacturer supplies to the parts maker, at the time the goods are shipped or sold, whichever is first, an order or contract of sale having a certificate written on it or attached to it, showing that the tires, inner tubes, parts or accessories so purchased are to be used solely in the making of new cars or for free replacement under contract or guarantee.

3. Thus all parts and accessory makers should obtain such certificates before they figure their tax and all car makers making purchases for the above purposes should add these certificates to the order.

4. There is one exception, that any otherwise taxable article sold for export and in due course exported, is not taxable.

5. For the full definition of taxable parts and accessories, see Articles 15 and 16 of Regulations 47.

6. The definition of parts may be said to exclude raw material or articles which are not so far advanced in their manufacture as to be capable of being used as a component part of a car, without further manufacture, and that substantially completely manufactured articles are not taxable parts unless they are designed or made for the special purpose of being used as a component part of an automobile truck, automobile wagon, other automobile or motorcycle.

7. The definition of accessories is not quite so restricted. It does, however, exclude raw material or accessories not so far advanced in manufacture as to be capable of use. A completely finished

article is not a taxable accessory unless it both adds to the utility of the vehicle and is primarily adapted for such use.

8. Complete automobile trucks or automobile wagons, including automobile delivery wagons, are vehicles primarily designed or adapted for the transportation of property. The tax rate is three per cent. of the manufacturer's selling price. All other automobiles and motorcycles are taxable at five per cent. Note carefully that the distinction is not one of commercial and passenger cars. It is trucks and wagons vs. other automobiles.

9. In addition to the new tax on tires, inner tubes, parts and accessories, the regulations reverse some of the rulings under the prior law. Under the present regulations sales to the Federal Government are taxable, whether the transaction is directly between the factory and the Government or indirectly. Sales to a state, county or city are tax free if the sale is directly between the factory and the state, city, county, etc. A new exemption is that direct sales by the manufacturer to a state, county or municipal institution, where the payment is made out of public moneys, is tax free.

10. The most important change is that a truck chassis, instead of being taxable at three per cent. as a substantially complete truck, is taxable at five per cent. as a part for a taxed vehicle. This means that truck chassis sales between the factory and the user are taxable at five per cent. and all sales of truck chassis by the factory to dealers, distributors, or other middlemen are taxable at five per cent., unless the middleman makes the purchase with intent to complete the vehicle and then sell it, in which case the factory sale is tax free if the middleman supplies the certificate required in Article 14 of the Regulations.

11. If he does this, he gets the chassis tax free and is taxed three per cent. on the complete truck when he sells it. If the middleman at the time of purchase cannot make the certificate because he does not know whether he is going to sell the bare chassis or the complete vehicle, the chassis factory is taxed five per cent., but if the tax is passed on to the middleman he may take credit for this amount of tax in paying his tax.

12. Another point is that if the manufacturer customarily sells both at wholesale and retail, then his wholesale sales are taxed on the amount received, but his retail sales are taxed not on the retail price, but on his average wholesale price for the preceding month. If the manufacturer does not customarily sell both at wholesale and retail, each sale, either wholesale or retail, is taxed on the actual amount received.

13. Articles sold for export and in due course exported are not taxed. This is true whether the sale is directly between the maker and the customer located abroad, or indirectly as through an American exporting house. However, if the article is not immediately exported, the transaction becomes taxable within six months after the sale unless the seller supplies the Revenue Bureau with certain proof of export, for details of which see Articles 42 and 43 of the Regulations.

More Truck Dealers Wanted

To the Editor:

Your recent circular letter enclosing a Publisher's Personal Page from April 15 COMMERCIAL CAR JOURNAL was called to my attention.

While we, as most manufacturers do, realize that general conditions to a great extent are hampering business, the crying need in the truck business today is *Truck Dealers.*

Your publication's future and our future is to a great extent dependent upon the creation of an as efficient a means of truck distribution as is enjoyed by the passenger car today.

I have before me a catalog of mailing lists and while they advertise a list of 47,209 auto dealers, their list of truck dealers is only 5,519.

The truck manufacturer is to an extent more fortunate than the passenger car manufacturer was in the earlier days of the passenger car, as he has a more or less educated gasoline propelled vehicle, sales organization to concentrate on.

But there are only three classes from which the truck manufacturer can draw for his distributors and dealers: A new organization, the implement dealer, and the passenger car dealer.

It is not my intention to dwell on the former, but the latter is the one that should have our most serious consideration.

We recently, from Chilton's Trade List and a well-known financial reference book, selected a list of 2,351 dealers' names and prepared a mailing campaign which brought forth a larger number of replies than was anticipated, but what was our regret when compiling figures to discover that of the first 263 replies received, 154 of them were from passenger car dealers who stated that they "were uninterested as they had decided to stick to passenger cars only," and daily more replies are being received exactly along the same lines.

This in view of the fact that the passenger car dealer is unquestionably the eventual truck dealer and is missing the chance today of selecting his line of trucks from the meritorious lines offered.

Well grounded ideas in my mind as to the reluctance of the passenger car dealer to take on the sale of trucks, I will not inflict on you as you are doubtless more familiar with them than myself, but you whose influence is such must use this influence in molding the passenger car dealer's mind more in favor of the truck as money making addition to his business.

We have no difficulty even at this time in disposing of our particular product where we have representation, but our chief difficulty is getting representation in territory where we are not represented.

Would it not be possible with your influence to have the various trade journals catering to the passenger car trade begin to influence their dealer clientele along truck lines, through their editorial columns?

Our industries are so closely allied, so covered by the same traditions, so beneficial to each other, that the sooner we get together the sooner the two industries will benefit.

Under any consideration, today the crying need is *Truck Dealers,* and the more seriously we consider this proposition, the quicker will the truck industry come into its own, as no matter what effort we put forth in printed word, unless the truck education of the prospect is carried by word of mouth, by the dealer and his salesmen, the development of the use of the truck universally will lag.—W. G. Jarman, General Manager, Panhard Motors Co.

Elimination of the Excise Tax

NEW YORK, May 22.—In his message to Congress on Tuesday, May 20, President Wilson shows entire sympathy with the requests that have been made for the elimination of excise taxes on motor car and truck manufacturers and on other industries. The following is taken from the official message:

"The main thing we shall have to care for is that our taxation shall rest as lightly as possible on the productive resources of the country, that its rates shall be staple, and that it shall be constant in its revenue-yielding power. We have found the main sources from which it must be drawn.

"Many of the minor taxes provided for in the revenue legislation of 1917 and 1918, though no doubt made necessary by the pressing necessities of the war time, can hardly find sufficient justification under the easier circumstances of peace, and can now happily be got rid of. Among these, I hope you will agree, are the excises upon various manufacturers and the taxes upon retail sales. They are unequal in the incidence on different industries and on different individuals. Their collection is difficult and expensive. Those which are levied upon articles sold at retail are largely evaded by the readjustment of retail prices."

With the message from President Wilson, it is now felt that Senators and Congressmen, many of whom are strongly in sympathy with his ideas on the subject, will hasten the time when such taxes will be removed.

The Special Committee of the National Automobile Chamber of Commerce in charge of this matter, will arrange soon for a meeting of those interested, with a view to making a proper presentation to the members of Congress.

In the meantime, everyone interested in the measure should write now to his Congressman and to his Senators, telling of his experience with these taxes, the difficulty of handling them properly and requesting that they be removed as soon as possible.

The trade must not assume that a removal of taxes will come at any very early period and it is hoped that dealers and retail buyers of trucks will not delay their purchases with the thought that the product can be bought soon without the tax. It probably will be many months before Congress can take definite action toward any changes in the present tax measures.

News of the Trade in Brief

National Show Dates Decided at Annual N. A. C. C. Meeting

NEW YORK, June 5.—At the annual meeting of the National Automobile Chamber of Commerce held here today it was decided by the manufacturers that the 1920 national shows will be held in New York January 3-10 and in Chicago January 24-31 for both passenger cars and motor trucks. Because of the general activity in war work last year it was voted to allot space on the basis of the trucks or cars sold during the year ending June 30 of 1917 or 1918 instead of the year previous to the shows as has been the custom in the past.

C. C. Hanch, secretary of the N. A. C. C., made a very interesting report on his recent three and a half months' trip abroad, stating that motor vehicles are greatly in demand in European countries, used machines selling as a rule at double the price they brought when new in 1914. Mr. Hanch also reported that the English, French and Italian manufacturers are making excellent progress in their endeavor to return to normal conditions.

Statistics of carload shipments of motor vehicles from the plants of the American manufacturers during May showed a total of more than 24,000 carloads, as compared with 17,833 carloads in May, 1918. This indicates that the factories are gaining in their endeavor to make up for the slump of more than a million machines in the normal production caused by war conditions last year. During the year ending April 30 there were only 189,429 carloads shipped by the American makers, as compared with 224,805 carloads in the preceding year.

General conditions affecting the industry and the present and future problems of the manufacturers were threshed out thoroughly, the progressive work of the Government in highway matters, motor fuel and patent matters being discussed, as well as the menace of the increasing amount of unfair legislation being aimed at makers and users of motor vehicles. The N. A. C. C. lawyers endeavored to interpret the new rulings of the Treasury Department in regard to taxes on motor vehicles and a resolution was passed, asking Congress to repeal all manufacturers' sales taxes, including those on cars and trucks, as suggested by President Wilson in his recent message.

A 36-page pamphlet on "Facts and Figures of the Automobile Industry" was distributed at the meeting. This pamphlet, which contains complete information in regard to production, registration, employees and other data concerning the motor vehicle industry during the past 20 years, was prepared by the N. A. C. C. headquarters staff at 7 East 42nd Street, New York, and is to be mailed free on request to anyone sending 10 cents to cover postage.

The following directors were re-elected: John N. Willys (Willys-Overland); H. H. Rice (Chevrolet); Roy D. Chapin (Hudson); C. C. Hanch (Studebaker), and J. Walter Drake (Hupmobile). A constitutional amendment will be offered at the next meeting increasing the directorate of the Chamber from fifteen to eighteen members in order to provide for more adequate representation of the rapidly-growing motor truck branch of the industry.

At a special meeting of the motor truck manufacturers held this afternoon a number of problems relative to the manufacture and use of motor trucks were taken up in detail. There were also committee meetings on standardization, repair parts and service policies.

Reorganization of Patent Office Proposed

WASHINGTON, May 31.—The Patent Office Society is calling attention to the fact that the Patent Office has been unable to obtain adequate appropriations from Congress for its most urgent necessities; that inventors have paid in fees a sum sufficient to have the work of examination done promptly and done thoroughly, and that, while everybody agrees that this money should be used for that purpose, nevertheless it has not been so used, to the great distress of the inventors of the country.

The Patent Committee proposes a program of but four features believed to be of fundamental importance: (1) The establishment of a single court of Patent Appeals to take over the appellate jurisdiction now lodged in the nine independent Circuit Courts of Appeal; (2) the establishment of the Patent Office as a separate institution independent of the Department of the Interior; (3) an increase in the personnel of the Patent Office to enable it to render prompt and efficient service and an increase in the salaries to approximate those paid in outside patent work, so that qualified examiners may be kept in the public service; (4) a change in the law relating to damages in infringement suits to answer one of the most common and strongest reproaches against the patent system, namely, that a patent does not ordinarily pay the inventor any money.

The examining force, the clerical force, the working space, office equipment, the library and other facilities are alleged to be totally inadequate for prompt and thorough work, although an unused fund of fees amounting to nearly eight and one-quarter millions has been allowed to pile up in the treasury.

Massachusetts to Fight Proposed Truck Fees

BOSTON, MASS., May 28.—The registration bill introduced into the Massachusetts legislature by the Committee on Roads and Bridges, which provides for enormous increases in license fees, is being vigorously protested in every section of the state.

The bill, if passed, will provide for higher fees than any in force in the United States, except those of Maryland. The proposed fees start at $10 for a ½-ton truck and reach $100 for a 5-tonner, with $50 additional for each ½ ton.

The bill provides that all trailers equipped with metal tires shall pay double the above fees, and electric trucks, trailers, etc., using pneumatic tires, shall pay only half the fees.

The controversy over the fees has retarded truck sales considerably. Users are declining to buy heavy trucks until the question is settled.

Dealers Fight Legal Decision

Automobile dealers all over the United States are interested in and should organize to fight the decision handed down in the United States Circuit Court of Appeals, for the Fifth Judicial Circuit which forfeits to the Government any automobile seized by federal authorities carrying whiskey on which the federal tax has not been paid, irrespective of whether the true owner of the car had anything to do with putting the whiskey on his machine or not. In other words, if a dealer has sold a car in good faith to an owner who is a law-abiding, respectable citizen, extending credit to the purchaser and retaining title to the car till the balance of the purchase price is paid, and some unauthorized person uses this car for transporting illicit whiskey, both innocent owner and car dealer lose their entire equity in the automobile.

Organization to fight this law has been started by the live wires of the Atlanta Automobile Dealers' Association, led by Robert H. Martin, of the Southern Oakland Co., president of the association. The legislative committee, consisting of John E. Smith, J. W. Goldsmith, Jr., and A. L. Belleisle, is also active in working for a more equitable decision.

The states immediately affected by this decision, comprised in the Fifth Judicial Circuit, are Georgia, Florida, Alabama, Mississippi, Louisiana and Texas, but a decision of this sort, especially in a Federal court, is used as a precedent all over the United States, and therefore is of deep interest to all dealers.

A test case is to be carried through the court and the best of legal talent has been engaged to care for the dealers' end of the case.

N. A. D. A. Now Has Department for Truck Dealers

ST. LOUIS, MO., May 31.—A department especially devoted to the interests of commercial vehicles has been opened by the National Automobile Dealers' Association, and will handle problems that arise solely in the truck sales trade. H. N. Cartinhour, of the Cartinhour-Bowman Co., of Indianapolis, Ind., distributor of Federal trucks, has been named commissioner of the Commercial Vehicle Division.

The object of the division will be to help devise ways for the dealers to sell trucks and trailers. Many of the N. A. D. A.'s members sell both passenger and commercial cars. In many instances the commercial cars were added after the passenger car lines had been handled successfully, and dealers failed to realize that the two presented a different selling problem altogether. As a consequence dealers became discouraged with the line and dissatisfied with the results of their investment. Recently there has been a realization that the two selling problems are different and they are writing to the National Dealers' Association presenting their problems, and it was deemed sufficiently important to create the new division and handle the suggestions from the standpoint of money making for the dealer.

Cartinhour is at work on general plans for commercial car sales promotion. His object will be to help every dealer in trucks to sell the truck transportation idea.

Queries in regard to the operation of the department should be sent to the Commissioner of the Commercial Vehicle Division, National Automobile Dealers' Association, 3124A Locust Street, St. Louis, Mo.

M. & A. M. A. Admits New Members

The Motor and Accessory Manufacturers' Association has recently admitted the following to membership in the association: Auto Wheel Co., Lansing, Mich.; Benjamin Electric Mfg. Co., 806 W. Washington Blvd., Chicago, Ill.; Black & Decker Mfg. Co., 105-115 S. Calvert St., Baltimore, Md.; Budd Wheel Corp., 22nd St. and Lehigh Ave., Philadelphia, Pa.; Columbia Axle Company, 850 East 72nd St., Cleveland, Ohio; E. Edelmann & Company, 351 East Ohio St., Chicago, Ill.; William R. Johnston Mfg. Co., 359 E. Ohio St., Chicago, Ill.; Parker Axle & Products Corp., 19 West 44th St., New York, N. Y.; Standard Tire Company, Willoughby, Ohio; Sunderman Corp., Lake and Ann Sts., Newburgh, N. Y.; Texas Company, 17 Battery Place, New York, N. Y.; U. S. Ball Bearing Mfg. Co., 4535 Palmer St., Chicago, Ill.

Build the road to carry the load. Make the highway feed the railway.—William C. Redfield, Secretary of Commerce

Proposed Improvement of Road to Hudson Tunnel

TRENTON, N. J., May 28.—At a recent meeting of the State Highway Commission of New Jersey a resolution providing for the appointment of a special committee to investigate the possibility of an improved thoroughfare from the Lincoln Highway to the Jersey entrance of the proposed Hudson vehicular tunnel was introduced by George E. Blakeslee, of Jersey City.

The principal feature of the Blakeslee plan is a viaduct on Twelfth Street, Jersey City, from Monmouth Street to Hoboken and Palisades Avenue, to be part of the new state highway system. From the end of this viaduct there would perhaps be a road to the Lincoln Highway. Mr. Blakeslee believes that the state should pay for the road improvement, and particularly so in view of the fact that Hudson County does not receive any funds from the state road tax.

Grand Central Palace to be Exhibition Building

NEW YORK, May 24.—The Merchants' and Manufacturers' Exchange of New York is planning to reconstruct the interior of the Grand Central Palace so as to make it a permanent exhibition building for all kinds of manufactured products. The industries will be grouped and permanent exhibits will be made on eight floors, each floor having approximately 60,000 sq. ft. of space. The four lower floors of the building will be utilized for exhibitions, and the Automobile Show, Electrical Exposition, etc., will be held there as usual. The Government will evacuate Grand Central Palace on September 30 and permanent exhibits of the more important industries will open October 15.

Detailed information may be obtained by addressing the Merchants' and Manufacturers' Exchange, 405 Lexington Ave., New York, Room 421, prior to October 1. After that date headquarters will be in the Grand Central Palace.

State Representatives to Advise in Federal Aid Highway Work

WASHINGTON, D. C., May 31.—To bring about the most effective co-operation between the Federal and State Governments in the big program of highway construction now under way, A. R. Hirst, president of the American Association of State Highway Officials, has named, at the request of the Secretary of Agriculture, a committee to act with the Department of Agriculture's Bureau of Public Roads in carrying into effect the Federal aid road act and its amendments.

Following are the state representatives selected by Mr. Hirst:

George P. Coleman, state highway commissioner of Virginia; S. E. Bradt, state superintendent of highways of Illinois; Charles J. Bennett, state highway commissioner of Connecticut; W. S. Keller, state highway engineer of Alabama, and Ira R. Browning, state road engineer of Utah.

Government Auction of Trucks Postponed

WASHINGTON, June 6.—The War Department announces that delays incident to the inventorying of its stock of surplus motor equipment which has been found to be unsuitable for government use will necessitate a postponement until after June 15 of the public auctions of used passenger and commercial cars, which had been announced for June 1.

While the number of cars and trucks which will be auctioned is small, the fact that they are a part of the equipment of the numerous army posts and camps scattered throughout the country has delayed the compiling of inventories beyond the expectation of the Motor Transport Corps. The data sought, however, is not sufficiently complete to permit the Department to hold the sales—after having advertised them—during the latter part of June. The auctions will be held at various army posts and camps at which the surplus equipment will be concentrated.

As previously announced, the major portion of all present surplus of motor vehicles held by the War Department is being transferred to other governmental agencies. Only a limited number of used cars and trucks of miscellaneous makes which are not adaptable for government use will be offered to the public.

Champion Spark Plug Salesmen in Convention

TOLEDO, OHIO, June 6.—One hundred and twenty-five salesmen, constituting the sales force of the Champion Spark Plug Co., are gathering at the home offices in Toledo for their semi-annual convention.

Owing to the war and the fact that so many of its salesmen were in the service, the spark plug company did not hold its regular January convention. But in the last few months 28 men have returned to the sales force, so that the event now in progress brings together many members of the sales organization who have not seen each other for more than two years.

Announcement to Manufacturers of Headlight and Signal Devices

The Motor Vehicle Department of the State of California announces the selection of the Department of Electrical Engineering of the University of California, Berkeley, Cal., as the testing agency for headlight devices that are manufactured and sold commercially as provided under the amendments to Section 13 of the Motor Vehicle Act, which will become effective July 22, 1919.

This department of the university will also test all signal devices as provided under the amended provisions of Section 20 of the Motor Vehicle Act, also effective on the above date.

Perfection Heater Company Expands

The Perfection Heater and Mfg. Co., of Cleveland, has acquired, in their entirety, the organization, assets, manufacturing facilities, etc., of the Perfection Heater Division of the Standard Parts Company.

The new company has already increased its organization and its facilities and is concentrating upon the manufacture of motor car heating equipment.

C. S. Pelton, whose connection with the Perfection Spring and the Standard Parts Co. dates back seven years, and who, for the last four years, has been in charge of the development of the Perfection Heater business under the old regime, is vice-president and general manager of the new company. E. L. Jones, for a number of years with the Remy Electric Co. and with the Standard Parts Co., is associated with the new organization as special factory representative. L. H. Peck, formerly machine tool designer for the Foote-Burt Co. and for 21 months a lieutenant in the Aviation Corps, has charge of engineering and production.

The new company is capitalized at $300,000. The officers are W. A. C. Smith, president; C. S. Pelton, vice-president and general manager, and F. D. Kellogg, secretary and treasurer.

The new company has leased a large section of a new fireproof building on Carnegie Avenue near E. 65th Street, Cleveland, and has increased production to 1000 heaters per day.

Goodrich Still Marketing Lockswitches

PHILADELPHIA, PA., May 26.—The Goodrich-Lenhart Mfg. Co. has issued the following statement relative to the recent litigation concerning the type of lockswitch manufactured by the company:

"Our suit against Warren R. Cox, under whose patents the K-W lockswitch is made, and his (Cox's) suit against us, were amicably settled by a settlement agreement that was mutually satisfactory.

"Under the terms of this agreement only a consent court decree was entered on a specific type of our present construction, and we are not only absolutely free to indefinitely furnish repairs for any lockswitches that we have sold or may sell in the future under the agreement, but we are free to sell many thousands of lockswitches—the number being so large that we can take care of all our customers for a long period of time—undoubtedly as long as there will be any market for the present type of lockswitch.

"Furthermore, it was provided, under a heavy penalty, that we would not be interfered with in the slightest degree as to our right to sell these many thousands of lockswitches, and consequently our trade is protected fully as to any lockswitches bought from us in the past, or we may sell in the future."

Detroit Seamless Steel Tubes Company Building New Plant

DETROIT, MICH., May 21.—Detroit Seamless Steel Tubes Co. has begun construction of a $3,000,000 plant on a 66-acre tract on Warren Avenue, opposite the Morrow aviation field, Detroit. The first section, costing $1,000,000, will be completed by January 1, 1920. The company will then move from its present place of business at West Jefferson Avenue and Nineteenth Street, which has been sold to the Pennsylvania Railroad Company.

The building plans provide for a structure of steel and glass, with brick and concrete facing. The roof will be of tile. The plant proper will occupy a space 350 x 50 ft. It will consist of three bays for manufacturing units, a separate heating plant and a two-story administration building. Each of the three manufacturing units will be 90 ft. wide, 550 ft. long and 20 ft. high, permitting the use of traveling cranes and other labor-saving machinery. A subdivision will be created in the vicinity of the building and 150 houses erected for workmen of the company. The entire construction and the financing of these homes will be done by the company to assist its employees in their housing problems.

Federal Brass Works Announces Change of Name

DETROIT, MICH., May 18.—The Federal Bearing & Bushing Corporation is now the corporate style of the former Federal Brass Works. This change of name, which the company states, was made because the new name is more descriptive of its product, was decided upon at a recent meeting of the board of directors.

When the company was first organized, brass parts, such as priming cups, carburetors, etc., were manufactured, but the company now makes babbitt-lined, bronze-backed bearings and bronze bushings exclusively.

There has been no change in either the ownership or management of the company. Lloyd P. Jones was elected president; S. C. Reynolds, vice-president and treasurer, and F. C. Heath, secretary.

Traffic Holds Successful Convention

ST. LOUIS, May 16.—The Traffic Motor Truck Corp. last Friday and Saturday entertained hundreds of dealers from all parts of the United States and Canada. The convention was held as an opening of the new fifty-truck-per-day plant at 5200 North Broadway.

Friday night a dinner was given at the Statler Hotel at which time announcements were made by various officials of the company. Guy W. Wilson, president of the corporation, gave an address on "The World's Greatest Business—that of Transportation." "There are more billions of dollars invested in transportation than in any other business," said Mr. Wilson. He contended that humanity progresses in the exact degree that man is able to improve his transportation facilities.

T. C. Brandle, vice-president of the corporation, took the Traffic truck from the radiator to the rear axle, dissected it and pointed out its merits.

H. H. Hawke, general sales manager, outlined the plans for expansion contemplated by the company.

Breckenridge Jones, president of the Mississippi Valley Trust Co., spoke on the attitude assumed by the American banker toward the automobile industry. He expressed the willingness of every responsible banking institution to cooperate entirely with every reliable automobile manufacturer.

The convention program included a sight-seeing trip through St. Louis, a trip of inspection through the factory, and a demonstration of the ability of the Traffic truck to climb hills under heavy loads.

One of the Features of the Convention Held at St. Louis, by the Traffic Motor Truck Corporation, Was a Buffet Luncheon

Du Pont Development Department Aids General Motors

WILMINGTON, DEL., May 31.—The Development Department of the E. I. duPont de Nemours & Co. has taken over a similar line of work for the General Motors Corp., in which the duPont Co. has become heavily interested.

Following out this suggested line of procedure the Development Department is now being carried on virtually as two separate organizations, one to be known as the duPont Development, handling problems which pertain to the duPont Co., the other the Motors Development Department, occupying itself with the work of the General Motors Corp.

Dr. Fin Sparre, assistant director of the Development Department, becomes the head of the duPont branch, with L. A. Yerkes as his assistant.

Standard Making a New One-Ton Model

It has been announced that the Standard Motor Truck Company, Detroit, Mich., is working on a new model one-ton truck, which is being built to meet the rapidly increasing demand for a light quality truck.

The new truck will complete the Standard line of 2-, 3½- and 5-ton trucks.

It is the intention of the Standard Motor Truck Co. to have this truck ready for delivery August first. The selling price will be announced later.

New Hospital Built by Clark Equipment Company

A hospital built primarily for employees and their families, by the Clark Equipment Co., manufacturer of internal gear drive axles and disc steel wheels for motor trucks, at its Buchanan, Michigan, plant, is conducted under the direction of the Clark Hospital Association composed of employees and representative citizens of the town. E. B. Ross, vice-president of the company, and Mayor of Buchanan, is president of this hospital association.

The plans for the hospital were made more than a year ago following a medical survey of the community by the company, when it was brought out that some local provision for the care of Clark employees in time of ill health was highly desirable.

Wilson Bodies to Bear Trade-Mark.—C. Haines Wilson, general manager and treasurer of the C. R. Wilson Body Co., of Detroit, announces that hereafter all bodies turned out by the Wilson plants will be trade-marked with the Wilson triangle, containing the words "Wilson-Built."

York Carburetor Perfecter Price Raised.—The Automotive Manufacturing Co., Dayton, Ohio, announces that the price of the York Carburetor Perfecter has been advanced to $7.50.

Claudel Carburetor Introduced to American Trade

NEW YORK, May 23.—The Claudel Carburetor, patented in France in 1902, is being introduced in America by E. J. Conill, licensee, and Israel Ludlow, with offices in Aeolian Bldg., New York City.

A. H. Doolittle, general manager, was for several years sales manager of the Zenith Carburetor Company and lately general manager of the Sunderman Carburetor Corporation. The Detroit branch in the Garfield Building, on Woodward Ave., will be in charge of Frank R. Jackson, also for many years with the Zenith Carburetor Co.

The Claudel Carburetor controls basic patents on many of the plain tube features incorporated in modern carburetion.

The Martin-Parry Corporation Formed to Make Truck Bodies

The Parry Manufacturing Co., Indianapolis, Ind., which has been producing automobile and truck bodies, announces the sale of the plant to the group of New York banking interests, which recently purchased the Martin Truck and Body Corp., of York, Pa. The two institutions will be merged under the name of the Martin-Parry Corp. It is proposed to issue 70,000 out of a total of 100,000 shares of stock with no par value, resulting in $400,000 for the new company, which will have $1,300,000 in quick assets, and an additional fixed asset value of $1,000,000. There will be no change in the personnel of the Parry organization.

Wayne Oil Tank & Pump Company Offers New Service

The Wayne Oil Tank & Pump Co., of Fort Wayne, Ind., has recently inaugurated a new consulting and advisory service for oil men. F. A. Bean, consulting engineer, has charge of this work.

There is to be no charge connected with the service of this department.

Functions of the service include. Standardization of equipment; economical operation and maintenance of equipment; designing and planning of buildings, ground layout, etc.

Cassidy to Market Tilton Fan Belt

NEW YORK CITY, May 25.—The Arthur S. Brown Mfg. Co., maker of the Tilton fan belt, has concluded arrangements with the Edward A. Cassidy Co., Inc., whereby this concern will act as the sales department for the Tilton Endless Woven Belt.

Roller-Smith Co., New York City, announces that it is now represented in St. Paul, Minn., by A. H. Savage, Pioneer Bldg. Mr. Savage will handle the Roller-Smith company's lines of instruments, meters anad circuit breakers in the states of Minnesota and North Dakota, and in parts of Wisconsin and South Dakota.

Lyons to Make Trailers

MANCHESTER, N. H., May 10.—The F. P. Lyons Iron Works is putting on the market a light trailer with a capacity of 750 lb., to cost $120. The company will erect a temporary addition to its plant to care for increased production. The manufacture of safety guards to enclose belts and different parts of machinery, and of building, architectural and other kinds of iron work, will be continued.

The Kalamazoo Motors in Production

KALAMAZOO, MICH., May 18.—The Kalamazoo Motors Corp. has filed articles of incorporation and has formally taken over the business of the Lane Motor Truck Co.

The company is capitalized at $250,000. It will occupy the building formerly occupied by the Lane company, and will manufacture the Kalamazoo truck in three sizes, 1½-, 2½- and 3½-ton.

Officers of the new company are: H. A. Crawford, president; C. J. Johnson, vice-president; R. M. Gregory, secretary; W. B. Milham, treasurer, and L. W. Coppock, chief engineer and production manager.

Packard Engineering Co., Cleveland, Ohio, announces that it has been made distributor in northeastern Ohio of Roof Overhead Valves, Miller carburetors and Frayer wire wheels. Warren Packard and J. W. Packard are directors of the company. The former was in charge of aviation equipment at the naval aircraft storehouse in Brooklyn. J. W. Packard was formerly president of the Packard Motor Car Co. Lieutenant C. C. Price, technical engineer, was in charge of aviation station equipment along the Atlantic Coast and Lieutenant W. R. Davis, advertising manager, was in charge of the installation of power plants in the navy dirigibles at the Goodyear plant in Akron.

International India Rubber Corp., South Bend, Ind., announces that it is rapidly approaching a capacity production of 500 tires a day. This company has been building tires for about a year in its factory at South Bend, which covers eight and one-half acres of ground and has a floor space of 29,504 sq. ft. It is located on the main line of the Vandalia-Pennsylvania railroad and is connected with the New York Central lines.

Ahlberg Bearing Co., Chicago, Ill., has opened two new branches to take care of customers in territories previously handled by distributors. The branch at Providence, R. I., is located at 511 Westminster Street, under the direction of Harold F. Woodworth. The other office is in the City Bank Building, 18th and Grand Streets, Kansas City, Mo. It is under the management of Edward A. Hefferman.

Associated Advertising Clubs Plan New Work

As the result of plans which have just been perfected, the work which the Associated Advertising Clubs of the World have been doing for the prevention of unfair competition through misleading advertising is to be multiplied several times.

The plan calls for the raising of a special fund of $141,000 a year (on a three-year basis) and the selection of five prominent business men to act as trustees for the fund. These trustees are:

F. A. Seiberling, president of the Goodyear Tire & Rubber Co., Akron; Festus J. Wade, president of the Mercantile Trust Co., St. Louis; S. C. Dobbs, vice-president of the Coca-Cola Co., Atlanta; David Kirschbaum, president of the A. B. Kirschbaum Co., manufacturing clothiers, Philadelphia; Henry L. Doherty, president of Henry L. Doherty & Co., investment bankers, New York.

Richard H. Lee has been appointed special counsel in charge of investigations.

The bigger work will take four chief directions (1) the establishment of a force of special investigators working out of the headquarter's offices of the Association in New York City; (2) intensive work for the establishment of additional local vigilance committees; (3) the establishment of a bureau to do in foreign markets what has been done for the protection of trade in North America; and (4) intensified work in co-operation with various trade associations, representing important lines of business, toward the establishment of "standards of practice" by leaders in these various lines for the elimination of evil practices which have been allowed to grow up.

Service Aviators Fly From Wabash to Detroit for Motor Transport Day

WABASH, IND., May 22.—Two of the large Curtis airplanes of the Service Motor Truck Company were driven in a non-stop flight from Wabash to Detroit for Motor Transport Day.

The two planes which performed at Detroit are part of a fleet of five installed by the Service Motor Truck Company for quick delivery of repair parts. This is the first adaptation of the airplane as an auxiliary transportation service of a large manufacturer.

English Soldiers and Sailors Seek Chauffeur's License

In England sailors and soldiers returning from the war are taking kindly to automobile driving. They are the recipients of about 90 per cent. of the 5445 licenses issued by the London police during March. In the same month 1743 public carriages have been licensed in the British capital.

Cincinnati Association Begins Drive for Members

CINCINNATI, May 26.—The Cincinnati Automotive Trades Association is inaugurating an extensive membership drive. There are 300 or more dealers in Cincinnati who may be considered prospective members, and before the membership campaign is concluded, it is hoped to have practically every one in the organization.

The association has adopted as its 1919 slogan the following: "In Constructive Organization There is Strength; Let's Get Together." That there are ample reasons for the automotive trades dealers of the city to get together, is evidenced by the comprehensive program which the association has pledged itself to carry out this year. The three chief points to which the organization wishes to devote itself are the establishment of a credit department, the elimination of unnecessary advertising, and the promotion of a spirit of co-operation among the dealers.

In order to properly present the numerous activities to the members and constantly keep alive the organization spirit, a small publication is being published once each month. It is called The Cincinnati Automotive Trades News, and is edited by Mr. Curl.

Townley Made President of American Institute of Electrical Engineers

NEW YORK, May 17.—Calvert Townley, assistant to the president of the Westinghouse Electric & Manufacturing Company, was elected president of the American Institute of Electrical Engineers at the annual business meeting of the Institute held on May 16, in New York City.

The newly elected president joined the American Institute of Electrical Engineers in 1901 and has been almost continuously active therein ever since. During the year just past he has been an American Institute of Electrical Engineers' trustee, and first vice-president of the United Engineering Society, a member of Engineering Council, chairman of the Public Policy and of the Development Committee, and a member of the Edison Medal and of other committees.

Olds Add New Building

LANSING, MICH., May 31.—Olds Motor Works is planning the erection of five new buildings at a cost of approximately $4,500,000. Construction is already under way, and upon completion of the new buildings the working force will be increased to 2000.

A new axle plant, consisting of two one-story units, each 140 x 740 ft., will enable the company to turn out its own axles at Lansing. Plans also include a new assembly addition, 91 x 600 ft., a new sheet metal and enameling plant, 180 x 480 ft., a trimming and sewing building, 71 x 700 ft., and large extensions to the heating plant.

New York State to Spend Over Sixteen Million Dollars on Highways This Year

NEW YORK, June 1.—An expenditure of over $16,000,000 by the State on new roads this year, and the birth of a campaign for "Hard Roads and Always Open" were the two salient features disclosed at a recent meeting of automobile men in Albany, according to Charles G. Bond, Esq., counsel for the Motor Truck Association of America.

Mr. Bond recently, in discussing Senate Bill 1150, pointed out the advantages of the bill, which was discussed at the meeting in Albany, and explained that the State was to receive from the Automobile Bureau in 1920 a sum estimated to be over $8,000,000, which will be spent for maintenance and repair of highways, as against $2,700,000 from the same source in 1918.

Mr. Bond gave some figures showing that this year over $16,000,000 would be spent by the state alone for highway purposes, as follows:

Direct appropriation for maintenance and repair	$5,500,000
From automobile fees	3,000,000
State aid to towns and counties	2,180,000
Federal aid	575,000
State appropriation to equal this	575,000
For relief of contractors to enable them to finish pre-war contracts	3,500,000
New bridges	900,000
	$16,230,000

In addition the various towns and counties will spend over $5,000,000 for the same purpose.

Date Set for 1920 Foreign Trade Convention

The Seventh National Foreign Trade Convention will be held in San Francisco, Cal., on May 12-15, 1920. It will be the first of these conventions to be held on the Pacific Coast, previous conventions having been held at Washington, D. C., New Orleans, St. Louis, Pittsburgh, Cincinnati and Chicago. In deciding on San Francisco for the convention city, the National Foreign Trade Council was influenced by the growing importance of the Pacific Coast in the foreign commerce of the country, and by the enthusiastic support which the Far West has given all previous foreign trade gatherings.

Keystone Announces Price Reduction

NEW YORK CITY, May 15.—The Keystone Tire & Rubber Co., announces a reduction of 12 per cent. on Keystone tires and tubes and Batavia tires. The Keystone company expects that a substantial stimulation of purchases will result from this price-cut.

M. T. M. A. Forms Vigilance Committee

The Motor Truck Manufacturers of America has formed its own vigilance committee for the purpose of reasoning with those producers who exaggerate the capacity of their trucks and whose prices are so low as not to warrant a reasonable profit and good material. This campaign is based on the idea that the man who is quoting erroneous capacities and who is placing his prices too low is a menace to himself as well as the business and is in need of some friendly advice. The association aims to carry into its own field in a broader and more comprehensive way the work undertaken by the Associated Advertising Clubs of America.

S. A. E. Program Has Features of Interest to Truck Men

NEW YORK, June 13.—The program for the summer meeting of the Society of Automotive Engineers contains, among other features of interest to truck men, discussions on "Motor Truck Ability and Its Relation to Trend of Truck Design," on which a paper will be read by L. P. Kalb, assistant supervising engineer, Standard Parts Co.; a paper on the "Efficiency and Durability of Ball and Roller Bearings in Worm Axles," by K. Heindlhofer, research engineer, S K F Ball Bearing Co.; a paper on "Steel Truck Wheels," by P. W. Klinger, chief engineer, Dayton Steel Foundry Co., and more general papers on the "Motor Fuel Problem," by Joseph E. Pogue, Division of Mineral Technology, Smithsonian Institute, and on the "Electric Heat Treatment of Steel," by H. P. Macdonald, vice-president, the Snead & Co. Iron Works.

The society urges all members to be present at the Standards Committee Meeting, which will be held on Monday, June 23rd, beginning at 10 A. M.

Standardization has in the past been one of the major activities of the Society, and one in which it has made a great reputation.

Essenkay Week Celebrated

CHICAGO, May 29.—Users, dealers and salesmen of Essenkay tire filler are celebrating "Essenkay Week," which the Essenkay Products Co. arranged as a fitting climax to its recent publicity campaign.

The company has recently been able to double its production, having increased its manufacturing facilities by the addition of a five-story building adjoining its present plant.

Tower Increases Capital

GREENVILLE, MICH., May 29.—The Tower Motor Truck Company, of Greenville, Mich., has found it necessary to increase the capitalization of the company from $200,000 to $500,000.

New buildings are being planned, as it is necessary to increase production of both the Tower 2- and 3½-ton models.

The Iowa Law Would Limit Truck Loads

DES MOINES, IOWA, May 20.—A law recently introduced into the Iowa state legislature, which, if passed, may cause manufacturers to alter construction specifications, provides that:

"The total maximum load on any one wheel of any motor vehicle, including the weight of the vehicle and the load it carries, shall be 4 tons, provided the total maximum weight of the vehicle and load shall not in any event exceed 14 tons. The total load on any wheel of any vehicle shall be limited to 800 pounds per inch of tire width in actual contact with the road surface, measured at the narrowest point of the tire, on all highways improved with a rigid surface such as concrete, brick or bituminous pavements on a concrete base; and 400 pounds per inch of tire width in actual contact with the surface, measured at the narrowest point of the tire, on all highways having earth, gravel or similar surfaces.

"The maximum width of any motor vehicle and its load shall be limited to 8 feet excepting loads of loose hay, straw and similar farm products."

A. S. M. E. Meets in Detroit

NEW YORK, June 10.—The program for the spring meeting of the American Society of Mechanical Engineers, to be held June 16 to 19, has been completed. It contains many features of interest and promises some spirited discussions.

A research session has been arranged for June 17, which includes a survey of the present condition of research in the United States, by Arthur M. Greene, Jr., and a paper on the organization and conduct of an industrial laboratory, by A. D. Little and H. E. Howe.

Truck Sales Managers to Meet Next in Detroit

MILWAUKEE, WIS., June 13.—The Detroit convention of the National Association of Truck Sales Managers is set for July 25 and 26. A large attendance is promised and it is expected that this will be the largest gathering of sales managers and factory executives yet held by the organization.

Coming Events

June 16-19—**Detroit, Mich.** Spring Meeting, American Society Mechanical Engineers.

June 21—**Philadelphia, Pa.** Annual Outing Motor Truck Assn. of Philadelphia, with the Philadelphia Auto Trade Assn., Automobile Accessories Business Assn. and Camden Auto Trade Assn. Kugler's Mohican Club.

June 23-27—**Ottawa Beach, Mich.** Summer Meeting, Society of Automotive Engineers.

July 25-26—**Detroit, Mich.** Convention National Association Motor Truck Sales Managers.

September 22-24—**Philadelphia, Pa.** Annual Convention, National Association Puchasing agents, Bellevue-Stratford Hotel.

May 12-15, 1920—**San Francisco, Cal.** Seventh National Foreign Trade Convention.

Citation for Employers Who Take Back Returned Soldiers

The following statement is issued by Grosvenor B. Clarkson, director of the United States Council of National Defense:

The War and Navy Departments having issued a citation to employers who give assurance that they will gladly take back their old employees who have served in the armed forces of the United States, it seems fitting that some symbol representing this attitude on their part should be placed upon the service flag.

The United States Council of National Defense, therefore, endorses the placing of the United States Shield upon the red border, but no names of individuals or business firms shall appear anywhere upon the flag. Any employer who sends the required assurance to the War and Navy Departments through Colonel Arthur Woods, Chairman of the Council's Emergency Employment Committee for Soldiers and Sailors, Washington, D. C., can receive the citation, and as soon as the citation is received such employer is entitled to put the shield upon his flag.

The shield should appear upon the service flag in the following manner: If the service flag hangs downward, as in a window, the shield should be at the top; if the flag flies from a mast, the shield should be placed on the border nearest the mast. In both cases the shield shall be right side up.

Townsend Highway Commission Bill to be Re-Introduced

WASHINGTON, May 24.—The re-introduction of the bill providing for a Federal Highway Commission to take over the control of the national highways and to co-operate with the state highway departments was forecast by Chas. E. Townsend, sponsor of the bill, at a meeting here on May 30.

The bill takes over the duties and authorities now vested in the Bureau of Public Roads, Department of Agriculture, and adds greatly to the duties and power of the road authorities.

William Hyslop

William Hyslop, president of Hyslop Bros., Ltd., Toronto, Canada, died suddenly in Toronto on April 26, following an attack of influenza.

Mr. Hyslop was born in Hamilton, Ont., in 1871. After leaving college, he went into business with his father, and later, with his brother, organized Hyslop Bros., Ltd. This company is a jobber of automotive equipment and a manufacturer of bicycles.

Caravan Motors Co., Portland, Ore., has recently been organized with a paid-in capital of $50,000 to manufacture Karavan motor trucks of 2½- and 4-ton capacities. George H. Peters will be in charge of the plant, and it is expected that production will begin in a few months.

EDITORIALS

Some More Drastic Legislation

MASSACHUSETTS truck owners are now being harassed by an outrageously high legislation bill, which, if passed, would practically prohibit the economical use of the larger size motor trucks on the roads of that state. The present truck fees in Massachusetts range from $10 for a one-ton truck up to $23 for a seven-ton truck. If the high registration bill goes into effect, the fees would range from $10 to $300. Such an increase in fees would practically ruin the business of the dealer in larger capacity trucks, and is already influencing buyers to decline the purchase of the heavier sizes until this matter has been settled.

It is gratifying to note that the trade of Massachusetts and the owners, as well as a number of local organizations, are taking this matter in hand and intend to fight it to a finish. It is simply astounding to think that legislators, and those in authority, show such lack of judgment and are so narrow minded as to try to put over such foolhardy measures. Probably by the time this issue is in the hands of our readers this matter will have been settled one way or the other, and we certainly trust that it will be decided in the interest of the motor truck users.

It only goes to show that the dealer should, at all times, keep himself informed as to what is going on in his community. In past issues of this publication we have given our viewpoint as to who, in our belief, is backing such pernicious legislation, and we still believe that we are right in our assumption.

Better Oil-Draining Facilities Needed

NOW that the motor truck manufacturers are getting back into their normal stride, we shall probably see, in the near future, a great many refinements in motor truck design that will tend to promote the life of the truck and make for increased economy of operation. Although last year's truck shows did not reveal many new things, the shows next winter will, undoubtedly, reveal some interesting changes.

It is a well known fact that the frequent draining of the crankcase oil is neglected—more so on trucks than on passenger cars. The reason for this is, that in the majority of trucks, the draining of the crankcase oil involves an undue amount of labor. The average operator is not inclined to crawl underneath the truck to unloosen the crankcase oil plug, for with him it is a case of "out of sight, out of mind." Of course, when trucks are given periodical attention this matter is taken care of, but the individual operator is apt to pay very little attention to this condition. There is no reason why the draining of the crankcase should not be taken care of by an arrangement workable from under the hood. A great many engine troubles could be eliminated if the crankcase oil was changed frequently. If the draining job could be accomplished with less labor it would materially help towards keeping truck engines in better working condition.

Truck Dealers Should Sell Bodies

THE truck manufacturer's almost universal custom of selling a chassis with a seat or cab only, has led the dealer, unknowingly, into the belief that all he can sell is the chassis. This is not the case. There is money for the dealer in the handling of suitable, standard truck bodies with their chassis.

There are more and more manufacturers turning out lines of standard truck bodies which dealers can handle just the same as chassis.

There is no question but that it is an advantage to the dealer to be able to sell a complete unit to his customer. True, there is a demand for bodies for special work, and even some of these are now being standardized. The truck dealer who has, in addition to the chassis, a good line of standard bodies, which he can apply at once without delay and without forcing his customer to go elsewhere to complete the vehicle, is going to sell more readily and turn his stock over more quickly than the one who does not have bodies to go on his machines.

Dealers! Help Repeal the Excise Tax

The taxes on trucks and truck parts are unjust. They add to the burden of the manufacturer, are difficult to collect, and are unequal in many respects. President Wilson wants the war tax repealed. Now is the time, therefore, for the dealer to write to his Congressman and his Senator, explaining the difficulties experienced in collecting these taxes, and requesting that they be removed as quickly as possible.

Personal Items

E. P. Barnett is now in charge of Milwaukee sales of the Titan Truck Co., Milwaukee, Wis. He was formerly connected with the Sterling Motor Truck Co., and later with M. D. Newald & Co., Stewart distributors.

E. Betts has resigned as foundry engineer of the Stroh Casting Co. and will be associated with Walter O. Adams in a new undertaking.

George W. Brooks has been appointed district representative for the Hudson Motor Specialties Co., Philadelphia, Pa. His territory will include Texas, Oklahoma, New Mexico, Kansas and Arkansas.

Raymond F. Brown has been appointed purchasing agent of the Bantam Ball Bearing Co., Bantam, Conn., succeeding C. D. Stoddard, who resigned recently to enter the automobile and garage business.

J. G. Cashin has recently been appointed advertising manager of the Standard Motor Truck Co., Detroit.

E. T. Causer has recently resigned as works manager of the R. D. Nuttall Co., Pittsburgh, Pa.

Andrew J. Collins has been appointed advertising manager of Ajax Rubber Co., Inc., New York City. Mr. Collins comes to Ajax after six years of service with the Atlas Portland Cement Co.

L. B. Fijux has been appointed Detroit district representative of the automobile equipment department of the Westinghouse Electric & Mfg. Co., Pittsburgh, Pa. His assistant will be **T. G. Haugh.**

H. A. Flogaus, recently with the Matthews Engineering Co., has joined the engineering staff of the Maibohm Motors Co., Sandusky, Ohio.

Harry T. Gardner has been made manager of the New York Automobile Trade Association, and will make his headquarters at the new office of the association at 1845 Broadway.

C. B. Harvey, who for the past ten years was connected with the automotive industry, has joined the sales force of the O. Armleder Co., Cincinnati, Ohio, covering the Middle West, with headquarters at Chicago.

W. D. Hopson, former representative of the Studebaker Corp. of America in the Orient, has been appointed service representative for General Motors Export Co. in the Far East.

S. Gordon Hyde is now advertising manager of the Buda Co., Harvey, Ill.

N. M. Jordan has resigned as secretary and treasurer of the Piedmont Motor Car Co., Inc., Lynchburg, Va.

Captain Georges Lepere, who came to this country in 1917 as chief engineer of the French aviation mission to America, is remaining in the United States as president of the Franco American Engineering Co., with headquarters and factory at East Grand Boulevard and Helen Ave., Detroit. This company will do consulting engineering work on automobiles and motors as well as airplanes.

L. E. Lyons, who has been acting as sales manager for the B. F. Everitt Co. for the past several months, has resigned and reentered the employ of the Sheldon Axle & Spring Co., with headquarters in Detroit. He will have charge of Michigan and Ohio territory.

T. C. Luce, who for the past five years has been connected with the American Chain Co., has joined the engineering department of the Apco Mfg. Co., Providence, R. I.

W. E. Manning has joined the sales force of the Samson Tractor Co., Janesville, Wis. His territory will embrace the western half of Missouri and the state of Kansas.

Charles Melhado, truck sales manager in the Latin Americas and the West Indies for the Republic Motor Truck Co., Alma, Mich., has left for a trip through Central and South America, appointing dealers and helping them in their organization work.

Horace Mills will be associated with W. O. Adams in a new enterprise. Mr. Mills was formerly director of sales of the Stroh Casting Co.

Russell Munro has returned from France and has resumed his duties as assistant advertising manager of the Ford Motor Co.

Jack Parker is now connected with the O. Armleder Co., Cincinnati, Ohio. He was formerly with the Oldsmobile organization.

C. D. Peet, formerly with the Republic Motor Truck Co., has been made assistant general manager and advertising manager of the Traverse City Motor Car Co., Traverse City, Mich., manufacturer of Napoleon trucks.

Stanley Rae, recently superintendent of the motor division of the Republic Motor Truck Co., will have charge of manufacturing for the Traverse City Motor Car Co., Traverse City, Mich.

Lieutenant F. W. Ramey, who recently returned from France, where he served as observation officer in the artillery, has been placed in charge of sales by the Cotta Transmission Co., Rockford, Ill.

W. G. Rath, formerly general office manager and assistant comptroller of the Republic Motor Truck Co., has been appointed general manager of the Traverse City Motor Car Co., Traverse City, Mich., manufacturer of Napoleon trucks.

D. J. Raymond, formerly of Crandon, Wis., and S. A. Raymond, formerly in the accessory business at Duluth, Minn., have arranged to manufacture the Raymond demountable rim at Jackson, Mich.

A. R. Sandt, recently released from military service, has accepted a position with the McVicker Engineering Co., consulting engineers, Minneapolis, as chief engineer. Mr. Sandt has been associated with the tractor and truck industry for a number of years.

W. A. Smaltz, former supply buyer for the Republic Motor Truck Co., is now general purchasing agent for the Traverse City Motor Car Co., Traverse City, Mich., manufacturer of Napoleon trucks.

Lon R. Smith has resigned as sales manager of the Buda Co., and is now general sales and advertising manager of the Midwest Engine Co., Indianapolis, Ind.

W. S. Stevenson has resigned, on account of ill health, his position as general sales manager of the Bethlehem Motors Corp., Allentown, Pa. **Roy S. Davey,** formerly assistant general manager, has been appointed his successor.

Wm. Storrie has recently joined the engineering department of the Apco Mfg. Co., Providence, R. I.

Dan C. Swander, supervisor of sales for the Standard Parts Co., Cleveland, has been promoted to a vice-presidency in that company.

John S. Thomson has been elected chairman and associate editor of "Gateway," a magazine published in Detroit. Mr. Thomson will cover the eastern field and his headquarters will be at 361 Bergen Ave., Jersey City, N. J.

W. D. Thompson has joined the sales force of the O. Armleder Co., Cincinnati, Ohio. He will make his headquarters in Denver and will appoint distributors for Armleder trucks throughout the West.

Hal G. Trump, for the last four years manager of the Chicago office of the Green-Fulton Cunningham Co., has joined the staff of the Campbell-Ewald Co., and will make his headquarters at the Detroit office of the company.

J. P. Mahoney

Who has assumed the position of sales manager of the Buda Company, Harvey, Ill. For the past three years Mr. Mahoney has been general purchasing agent of the Buda Company.

Lon R. Smith

Formerly sales manager of the Buda Company, who has been appointed sales and advertising manager of the Midwest Engineering Company, Indianapolis, Ind.

Walter H. Shimpf

Who has recently joined the sales organization of the motor truck division of the Paige-Detroit Motor Car Company, Detroit, and will have charge of the eastern sales department.

E. L. Jones

Formerly with the Remy Electric Company and the Standard Parts Company, who has been appointed special representative of the Perfection Heater and Manufacturing Company.

J. G. Utz, supervisor of engineering for the Standard Parts Co., Cleveland, Ohio, has been elected a vice-president of that company.

Manuel Velasco has been appointed distributor of the Hall line of chassis for Cuba by the Automotive Products Corp., New York City, export manager for the Lewis-Hall Iron Works. Mr. Velasco was formerly general manager of the Matanzas Importing Co., and later entered business for himself as a manufacturer's agent.

Lieut. E. A. Wales, formerly chief of production, Motors Division, Quartermaster Corps, has returned to the Raybestos Co., and is in charge of the Detroit office of the company at 1713 Dime Bank Bldg.

Stanley K. Wallace has been appointed purchasing agent for the G. Norman Baughman Co., Tampa, Fla., jobber and distributor of automobile supplies. He succeeds Mr. Pettingill, who resigned recently.

Charles F. Ward is now covering territory in Massachusetts and Connecticut for the O. Armleder Co., Cincinnati, Ohio. He will appoint distributors for Armleder motor trucks in that section.

R. H. "Dick" Welles, former general manager of the Badger Brass Co., has been appointed a representative of Charles S. Monson, Detroit. He will represent the lines of the Kellogg Mfg. Co., Edward V. Hartford, Inc., Laminated Shim Co. and the Bloom-Flusher Co.

Martin K. Whalen has been appointed manager of Southern District of International India Rubber Corp., South Bend, Ind.

C. A. Wheelock, formerly distributor of Menominee trucks in Denver, has organized a company to be known as the Western Machinery & Supply Co., and will distribute Menominee trucks throughout the states of Colorado, Wyoming and New Mexico, with headquarters at Denver.

D. McCall White has resigned his position as vice-president and assistant general manager of the Cadillac Motor Car Co., Detroit.

William T. Whitlock, for a number of years connected with the Fisk Rubber Co., Chicopee Falls, Mass., has resigned his position with that concern.

J. C. Witwer, formerly connected with the Kelly-Springfield Tire Co., has joined the International India Rubber Corp., South Bend, Ind., as superintendent in charge of production.

Justin R. Weddell has been made advertising manager of the Firestone Tire and Rubber Co., Akron, Ohio. His name was incorrectly spelled in our last issue.

William H. Yule, manager of mechanical sales for the B. F. Goodrich Rubber Co., Akron, Ohio, has announced his resignation, and will leave the rubber industry to manage his newly purchased orange and fruit ranch near Santa Barbara, Cal.

Factory News

General Motors Co. of Canada, Ltd., has been formed with an authorized capital of $10,000,000. This company is related to the General Motors Corp. of the United States. R. S. McLaughlin, president of the McLaughlin Motor Car Co., and vice-president and director of the General Motors Corporation, is president of the new organization.

Chicago Pneumatic Tool Co., Chicago, will erect a ten-story building at 6-8 West 44th Street, New York City. It plans to move its general offices to this city from Chicago.

Hill Pump Valve Co., Chicago, Ill., has purchased a large tract of land at the corner of Belmont and Knox avenues for the erection of a plant to cost about $500,000. The first unit will be one-story, of sawtooth construction, and will contain about 50,000 sq. ft. of floor space. The plant has right of way of the Chicago and Northwestern railway.

C. S. Pelton
Vice-president and general manager of the recently organized Perfection Heater and Manufacturing Company, Cleveland, Ohio.

Savoid Tire Corp., with New York office at 5 Columbus Circle, and headquarters in Chicago, has established an eastern factory in Philadelphia. This company has control of patents covering a new process for remaking old tires of any type, which, the company guarantees, will run for 3500 miles after rebuilding.

Studebaker Corp., South Bend, Ind., now plans to spend $8,500,000 on its new plant. This is about double the original amount. With the completion of the new plant at South Bend, Ind., the company will have an additional 5,000,000 sq. ft. of floor space. It is believed that when this plant is in full production, that the output of the company, including the Detroit factory, will be 750 cars per day.

Detroit Trailer Co., Inc., Detroit, Mich., formerly located at 453-56 Stanley Ave., announces that its new plant at Jos Campau Ave. and Atwater Street is now completed. There are large storage yards adjoining the factory and the company is planning to run in side-tracks from the terminal railway. The factory is well situated both as regards traffic and shipping facilities.

Packard Motor Car Co., Detroit, has acquired a tract of land on the outskirts of Detroit for use as a private experimental flying field. The company will begin immediately to grade, till and seed the new field and will erect buildings as they are needed. It is expected that the field will be ready for operations by mid-summer.

New Era Spring & Specialty Co., Grand Rapids, Mich., announces that the two fires which damaged the spring factory of the company, twice in the last month, have not interfered materially with production.

John Bohnet Co., Lansing, Mich., has increased its capitalization to $100,000. The company plans to enter the truck body field and will make a specialty of hearse, delivery and ambulance bodies.

American Motors Corp., Plainfield, N. J., to provide for increased production, has announced a stock issue of $500,000.

Carlisle Cord Tire Co., New York City, announces an increase in its preferred stock from $500,000 to $1,000,000 and an increase in the common stock from $10,000 to $25,000.

The United States Rubber Plantations, Inc., has been formed, with an authorized capital stock of $100,000,000, for the purpose of extending the rubber estates of the United States Rubber Co., New York City, in Sumatra, Dutch East Indies. The officers re-

William A. Blackburn
Formerly factory manager of the Cadillac Motor Car Company, who has been made manager of the Gray Motor Company, of Detroit.

A. W. Frehse
Former assistant chief engineer of the Jordan Motor Car Company, who has joined the engineering staff of the Detroit Pressed Steel Company, Detroit.

Captain Wakeman Hackett
Who has been made factory representative of the Oshkosh Motor Truck Manufacturing Company, and will cover middle western territory.

Frank S. Corlew
Who has been made manager of the New England branch of the Jenkins Vulcan Spring Company, with headquarters at 819 Boylston Street, Boston.

cently elected include: Samuel P. Colt, chairman; Lester Leland, vice-chairman; H. Stuart Hotchkiss, president; W. S. Gordon, W. J. Gallagher and John W. Bicknell, vice-presidents; John W. Bicknell, treasurer, and L. D. Tompkins, secretary.

Mohawk Rubber Co., Akron, Ohio, has under construction a new addition to its plant. This addition is in the form of a new wing which will house portions of the Cord Tire building and curing departments.

Belmont Motors Corp., Lewistown, Pa., expects soon to be in production on ½, 1- and 2-ton motor trucks, and is now building sample trucks. This company has erected a factory, of brick construction, along the main line of the Pennsylvania railroad. It contains 60,000 sq. ft. of floor space.

Red Head Spark Plug Corp., with sales offices at 261 Broadway, New York City, and factories at Newtown, Pa., and in New York City, has taken over the patents, rights, machinery and good-will of the spark plug department of the Emil Grossman Mfg. Corp., of Brooklyn, N. Y., and is now making Red Head Vitristone Spark Plugs. The manufacturing facilities of the new corporation will be devoted exclusively to the production of Red Head spark plugs.

Diamond Body Co., Philadelphia, Pa., has installed machinery for the manufacture of bodies for commercial cars. The company plans to build bodies for trucks of from 1 to 7 tons capacity.

F. C. Rittenhouse, Philipsburg, Pa., manufacturer of mine cars and mine supplies, is enlarging its plant and will manufacture truck bodies and motor car springs in all sizes. The company will erect several buildings to handle this manufacture.

Westinghouse Electric & Mfg. Co., of Pittsburgh, will soon begin the manufacture of small motors in the largest of its three plants at Springfield, Mass. About 2000 people will be employed at the factory, the equipment of which will cost about $1,000,000.

Four Wheel Drive Auto Co., Clintonville, Wis., will commence building operations immediately on a plant at Kitchener, Ontario. The Canadian company is capitalized at $200,000, $100,000 of the stock being owned by the Wisconsin company. J. D. Cotton is president of the new company; Henry Nyberg, vice-president and sales manager; Archie Kerr, secretary, and W. G. Cleghorn, treasurer. The directors include officers and E. C. Kahel, W. T. Barrie and H. J. Sims.

Wisconsin Parts Co., which recently took over the E. B. Hayes Machinery Corp., of Oshkosh, Wis., is making additions to its plant, which will enable it to double the present production. This company will continue the manufacture of Wisconsin Worm Drive Axles for trucks and is making also a tractor axle. The company has a capital stock of $500,000, of which $300,000 is preferred and $200,000 common stock. W. F. Rockwell is president, and Louis Schriber, vice-president of the company.

New Agencies

Beaudry Motor Co., Atlanta, Ga., will handle Hercules bodies for Ford trucks in all territory in Georgia, north of Macon.

Armleder Motor Sales Co., 3223 Lorain Ave., Cleveland, Ohio, has been incorporated by J. F. Gleichauf, president; John W. Reitz, vice-president and manager, and Justin Gleichauf, secretary and treasurer. They will distribute Armleder trucks in Cleveland, Ohio.

The International Motor Company, of New York, has opened a factory branch at Atlanta, Ga., under the name of International Mack Corporation for the distribution of Mack trucks in Georgia, Florida and South Carolina. Pending the building of new plant, temporary headquarters have been established at 1709 Third National Bank Bldg.

Fulton Truck Co. of Nebraska has recently been formed to distribute Fulton trucks in Nebraska, with Omaha as headquarters. J. M. Robbins heads the company. He was formerly district manager for the Chalmers Motor Co. at Omaha.

Sanford Motor Truck Co., Syracuse, N. Y., has recently appointed the following dealers: C. L. Kerr, 47 Exchange St., Geneva, N. Y.; H. H. Cornick, 370 Chenango St., Binghamton, N. Y.; James Pritchard & Sons, Ithaca, N. Y.; William Penn Auto Co., 111 9th St., Altoona, Pa.

Motor Sales & Finance Corp., capital $500,000, fully paid in, has recently been organized in Sioux Falls, South Dakota, and has taken over the general distribution of the "Kalamazoo" truck throughout South Dakota, North Dakota, Minnesota, Nebraska and western Iowa. General offices have been established at 321 South Phillips Ave., Sioux Falls. The officers and directors are: President, C. J. Johnson; vice-president, W. I. Thompson; secretary, Eugene Reiley; treasurer, M. C. Smith; assistant secretary, R. L. Harris. The above are the board of directors. O. A. Kruse is sales manager.

Removals and Trade Changes

Alemite Die-Casting & Mfg. Co. is now the name of the former Alemite Metals Co., of Chicago, Ill. The company states that the change in name was made because the company has broadened its field of operations to include die-casting and manufacturing, and is putting on the market an automobile lubricating system. It is expected that production of these systems will reach 1000 per day in the near future. Service stations have been established in Chicago, Kansas City; Portland, Oregon; Los Angeles and Salt Lake City.

The American Bureau of Engineering, Chicago, Ill., maker of the Ambu Electric Trouble Shooter, announces the removal of its offices and stock rooms to 1601-1603 S. Michigan Ave.

International Harvester Co., Chicago, has purchased from the Parlin & Orendorff Co. its manufacturing plant and real estate at Canton, Ill. With the addition of the plow the International Harvester Company will now be in a position to supply a complete line of farm implements to the trade. The transaction does not include purchase of the Parlin & Orendorff branch house buildings and realty. These are taken under lease and will be used to facilitate distribution of the P. & O. line to local territory.

Franklin 2-Way Converter Co. has removed to 69 West Washington St., Chicago, Ill. The factory of the company is located at Franklin Park, Ill.

McIntyre Motor Products Co., Chicago, Ill., announces its removal to new and larger quarters at 5417-19 S. State St.

National Tool & Manufacturing Co., Chicago, Ill., has changed its name to the Bluebird Manufacturing Co., in order that the firm may be more closely connected with the Bluebird products which it manufactures.

Bull Tractor-Madison Motors Corp., Anderson, Ind., has been taken over by the Bull Tractor Co., which has also acquired the factories and business of the Madison Motor Car Co. The new company will manufacture both the Bull tractor and the Madison car.

American Bosch Magneto Co., Springfield, Mass., has disposed of its holdings in the Eisemann Magneto Co., recently sold by the Alien Property Custodian.

Republic Motor Truck Co., Inc., Alma, Mich., has opened eastern headquarters in New York City. J. Martin Van Harlinger is district manager. Associated with Mr. Van Harlinger is John Sawa, who will make his headquarters at Pittsburgh, operating from the New York office.

Turnsted Mfg. Co., Detroit, Mich., a subsidiary of the Fisher Body Corp., announces its removal to a new plant on Artillery Ave. This plant has 100,000 sq. ft. of floor space.

Simplicity Demountable Wheel Co. announces its removal to 43 Ottawa Ave., Grand Rapids, Mich.

Briscoe Devices Co. announces that it has succeeded the Jackson Carburetor Co., of Jackson, Mich. The Dave Buick carburetor will be manufactured, with refinements, and will be known as the Scoe Carburetor. The company is under the management of Frank Briscoe, A. W. McCalmont, formerly with the Jackson Automobile Co., and recently returned from overseas, will be sales engineer. A new plant is under construction and carburetors for use in Ford, Briscoe, Maxwell and Dort cars are now available for delivery and other models will be added.

Mechanical Belt Co., St. Joseph, Mo., announces its removal to 4032 Ravenswood Ave.

Electrical Alloy Co., Morristown, N. J., announces that all export business will be handled in future direct from its general offices and mills at Morristown, N. J. This company manufactures nickel and nickel alloy, wire, rods, strips and tapes.

Syracuse Automobile Supply Corp., with headquarters at 311 South Warren St., Syracuse, N. Y., has been formed to take over the Syracuse Auto Supply Co., Inc. The new firm is incorporated for $60,000. Officers of the corporation are: Lee W. Bennett, president and general manager; C. C. Bradley, Jr., vice-president, and C. Hamilton Sanford, treasurer. The directors include the officers and H. W. Smith, H. G. Strong and S. Regar.

Fulton Motor Truck Co. announces that sales and executive offices of the company are now located in the Ford administration building at Broadway and Fifty-fourth St., New York. The Fulton truck line will be displayed at the offices, as an entire floor of the building has been taken.

Times Square Auto Supply Co., New York City, announces the opening of a branch store at 796 Broad St., Newark, N. J. Moe Marn will be manager.

Ti-Test Ring Co., Inc., New York City, announces that it has changed its name to the Yale Piston Ring Co., Inc.

Walter M. Nonnes, president and general manager of the Norma Ball Bearing Co., New York City, purchased all of the foreign controlled stock of the corporation at a sale of the Alien Property Custodian. A total of 1950 shares, valued at $500,000, was involved in the transaction.

Cleveland Tractor Co., Cleveland, Ohio, announces that it has adopted the name "Cletrac" as the registered name of its tractor. The phrase Tank-Type-Tractor is in connection with the name, as the Cletrac is of crawler construction.

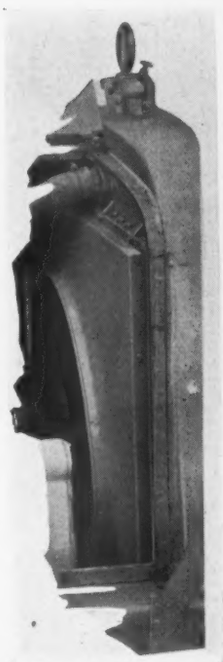
Powrlok Co. is now the corporate name of the former M. & S. Corp., which recently announced its removal from Detroit to Cleveland. Factory and offices will be located at 1107 East 152nd St. The concern is now prepared for enlarged output of its locking differential.

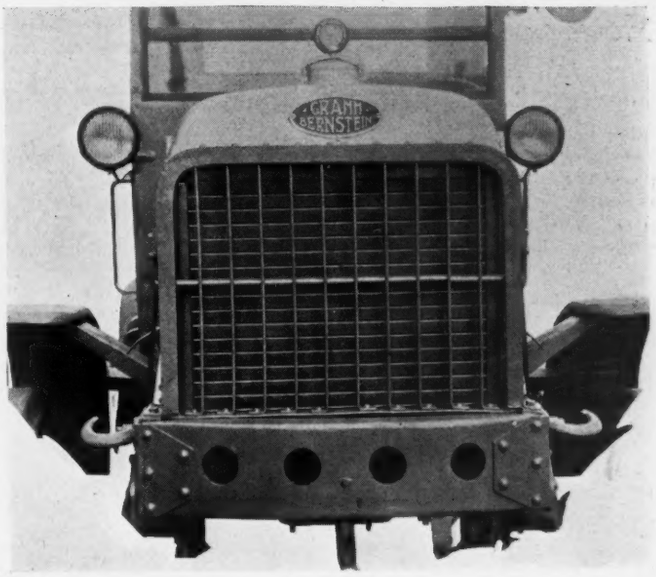
Gramm-Bernstein Models Fully Equipped

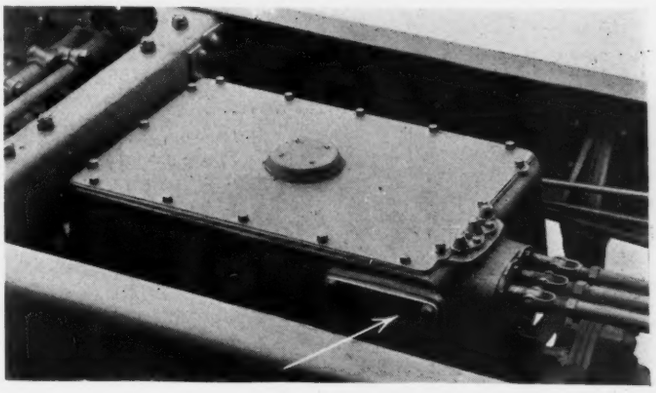
The Gramm-Bernstein Motor Truck Co., of Lima, Ohio, states that it is pioneering the way in making the announcement that it is now offering its line of worm-drive heavy duty trucks, with full equipment. This line includes 2, 2½, 3½ and 5 ton capacities.

These trucks are offered ready for the body, even to the extra sills that are required for some capacities and types of bodies. Their equipment includes: Sturdy radiator guard, attached to the frame independently of the radiator; radiator shutter, operated by the driver from the dash, with auxiliary motometer; rear radiator shroud, adapted by B. A. Gramm for truck use and adopted for Liberty trucks after the Mexican campaign had demonstrated its greater cooling efficiency; pig-tail towing hooks at front end, and spring trailer drawbar with clevis yoke and pin at rear end, supported by an extra cross-member in the frame; standard Gramm-Bernstein cab complete, with exceptionally rugged ventilating windshield and storm curtains; heavy front fenders and steps.

A feature of this line is the Gramm patented transmission in which the gears are always in mesh and engagement is made by means of patented dog clutches instead of sliding gears. The gear case is three point suspended. The three points are so trunnioned as to entirely prevent twisting or torsional strains in the transmission unit. A feature of this transmission is the provision whereby a power take-off can be attached to operate a dump body, winch, log-roller or for any other purpose.

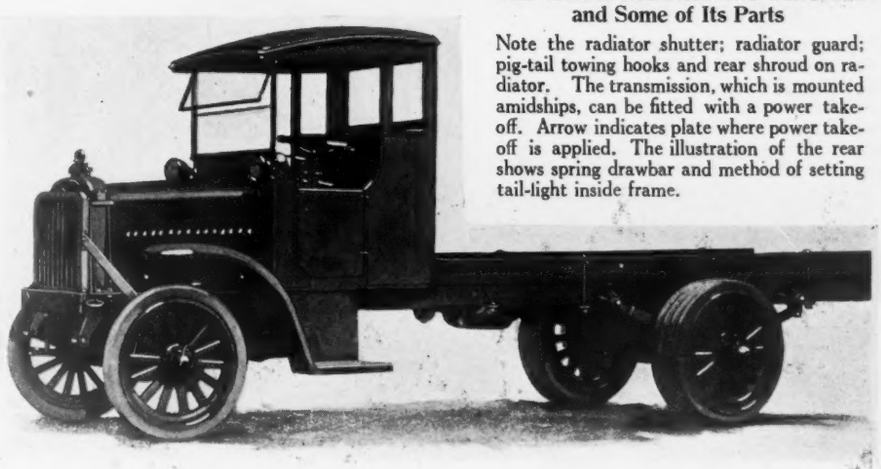


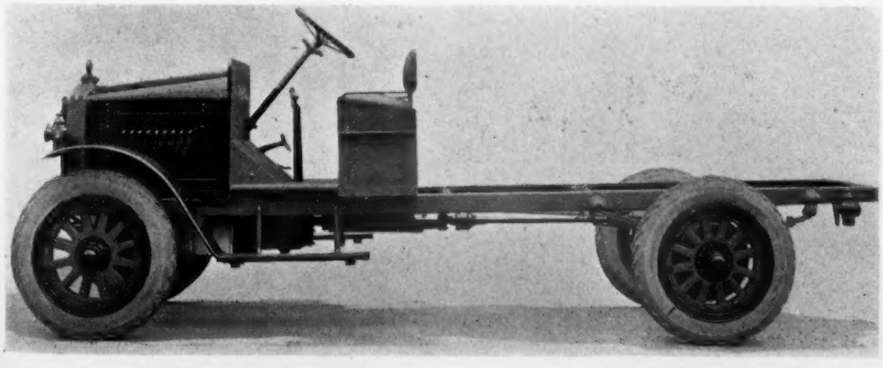




The Gramm-Bernstein Two-Ton Truck and Some of Its Parts

Note the radiator shutter; radiator guard; pig-tail towing hooks and rear shroud on radiator. The transmission, which is mounted amidships, can be fitted with a power take-off. Arrow indicates plate where power take-off is applied. The illustration of the rear shows spring drawbar and method of setting tail-light inside frame.





New One and a Quarter Ton Acason Chassis Fitted With Pneumatic Cord Tires

This is the latest addition to the line manufactured by the Acason Motor Truck Company, of Detroit. Specifications include a Waukesha engine; the new one and a half ton Timken worm-drive axle; Blood Brothers universal joint; Detroit Steel Products spring. As will be noticed from the illustration, this model is fitted with right-hand drive.

Metal and Rubber Markets

Active Market for Steel

The situation in the steel market is much better than it has been for some time. There is absolutely no talk at present of lower wages, as the production rate is showing unmistakable signs of improvement and general mill operations are averaging 60 per cent. of capacity. It is intimated that capacity production may be realized by September.

The export demand is reported to be brisk in some directions, but producers do not hold out too high hope for improvement in this line of trade before the signing of the peace treaty.

Members of the American Iron and Steel Institute met during the past month for their annual convention in New York City. The keynote of the speech of Judge Gary, president of the Institute, was one of optimism at the progress which is now being made in the readjustment of the industry to a normal condition.

Steel Products Prices

Per ton, Pittsburgh—

Bessemer billets	$38 50	a	....
Open hearth	38 50	a	....
Forging billets	51 00	a	....
Sheet bars	42 00	a	....

Sheets

The following prices are for 100-bundle lots and over f.o.b. mill:

Blue Annealed Sheets—			
Pittsburgh	$3 55	a	....
Philadelphia	3 79	a	....
Chicago	3 82	a	....
Galvanized Sheets of Black Sheet Gauge—			
Pittsburgh	$5 70	a	....
Chicago	5 97	a	....
Tin—Mill Black Plate—			
Pittsburgh	$4 35	a	....

Tin Plate

Tin plate, pme, per base box.	$7 00	a	....
Terne plate, I. C.	7 05	a	....

Iron and Steel at Pittsburgh

Bessemer iron	$29 35	a	....
Bessemer steel, f.o.b. Pitts.	38 50	a	....
Skelp, grooved, steel	2 45	a	....
Skelp, sheared, steel	2 65	a	....
Ferromanganese (70 per cent.)	130 00	a	....
Steel, melting scrap	15 50	a	....
Steel bars	2 35	a	....

Prices of Other Metal Products

COPPER.—There is no talk heard among the leading sellers of any reduction from current levels and there is a feeling that the price will be held at the 16½c to 16¾c range until buying again starts and that after that there may be even higher prices.

ALUMINUM.—The market for aluminum, 98 to 99 per cent. ingots, is quoted at from 31 to 32c per pound.

TUNGSTEN.—Inquiries and a fair amount of business are reported in this market. Holders are not willing to sell at current prices. There is a fair export business, which is helping to strengthen the tone. Chinese ore, spot, is quoted at $7 per unit. Bolivian ore is quoted from $9, according to grade.

The following prices are current on brass and bronze items:

Copper sheets, hot rolled	23 50	a	24 00
Copper sheets, cold rolled	24 50	a	25 00
Copper bottoms	31 50	a	32 00
Seamless tubing, bronze	30 50	a	....
Cut lead, sheets	8 25	a	....
Copper rods	20 00	a	21 00
Copper wire	18 00	a	18 50
High brass wire	19 75	a	....
High brass sheets	19 75	a	....
High brass rods	18 25	a	....
Low brass sheets	21 75	a	....
Low brass wire	21 75	a	....
Low brass rods	22 25	a	....
Brazed tubing, brass	30 50	a	....
Brazed tubing, bronze	35 00	a	....
Seamless tubing, brass	28 50	a	....
Seamless tubing, copper	28 00	a	....

Prices of Old Metals

	Buying.		Selling.
Aluminum—			
Cast scrap	19	a19½	21 a22
Sheet scrap	20	a20½	21½a22½
Clippings	22	a23	24 a25½
Copper—			
Heavy machinery comp.	12½	a13	13¾a14½
Heavy and wire	12½	a12¾	13¼a13¾
Light and bottoms	10½	a11	11¾a12
Heavy, cut and crucible.	13	a13½	14 a14½
Brass, heavy	7½	a7¾	8¼a8¾
Brass, light	6¼	a6½	7 a7¼
No. 1 clean brass turn'gs	6½	a6¾	7½a7¾
No. 1 comp. turnings	11	a11½	12 a12½
Lead, heavy	4⅛	a4¼	4½a4¾
Zinc scrap	4¼	a4½	4¾a5¼
Block tin, scrap	60	a62	66 a67

Little Demand for Plantation Rubber

There is little urgency in the demand for plantation rubber from any quarter, but inquiries received lately indicate that buyers are more interested in the forward positions than in stock on the spot or nearby.

Para—Up-river, fine, per lb.	56¼	a	..
Up-river, coarse	34½	a	34¾
Island, fine	47	a	47½
Island, coarse	21½	a	22
Caucho, ball, upper	35½	a	..
Caucho, ball, lower	..	a	..
Cameta	21½	a	..
Plantat'n—First latex, pale crepe	46	a	..
Brown, crepe, thin, clean..	39	a	40
Smoked, ribbed, sheets	45¼	a	45½
Centrals—Corinto	35	a	37
Esmeralda	35	a	37
Guayule, wet	30	a	..
Guayule, washed and dried.	40	a	..
Balata, sheets	90	a	..
Balata, block, Ciudad	..	a	75
Balata, block, Panama	55	a	60
Mexican—Scrap	39	a	..
Slab	32	a	..
African—Massai, red	..	a	..

Scrap Rubber

Tires—Automobile	3¼	a	..
Bicycles, pneumatic	3	a	..

Goodrich Truck Tire Salesmen From Thirty-five States Attended a Practical Demonstration of Modern Truck Tire Service in the Plant of the Gustav Shaefer Wagon Company, Cleveland

Every angle of ideal truck-tire service was discussed at morning and afternoon sessions. A banquet, movies depicting the manufacture of solid tires, talks by S. V. Norton, Goodrich Truck Tire Sales Manager, and E. J. Hughes, Manager of the Sales Personnel Department, were features of the convention.

The Annual Meeting of Parker Motor Truck Company

MILWAUKEE, WIS., May 28.—At the annual meeting of the stockholders of the Parker Motor Truck Co. the capitalization of the company was increased from $350,000 to $500,000 in the form of additional preferred stock.

The following directors were re-elected: Adam J. Mayer, Wm. A. Davidson, F. H. Parker, Max. W. Nohl, J. K. Sinyard, E. J. Hughes, Faustin Prinz, Fred Gettelman, L. L. Newton.

Of the above directors Adam J. Mayer was re-elected president; F. H. Parker, vice-president, and L. L. Newton, secretary-treasurer and general manager.

Globe Machine and Stamping Dedicates Club Rooms for Employees

Employees of the Globe Machine and Stamping Company, of Cleveland, Ohio, assisted on Saturday, May 17, at the dedication of the club rooms which have been furnished for them by the company. The rooms are for the use of the Globe Social Club, which was granted articles of incorporation on February 19, and to which all who have been in the employ of the company for thirty days are eligible for membership.

Motor Truck Dealers Make Good Profits by Selling Standardized Truck Bodies With Chassis

Body Manufacturers Have Made It Easy for Motor Truck Agents to Add the Body Profit to Their Chassis Sales. Standard Bodies Cover Wide Range of Uses

An extra profit for dealers in motor trucks, through the sale of standardized truck bodies as a side line, has been made possible and practicable by the large manufacturers of this type of truck equipment. Those motor truck agents and distributors who have taken on this addition to their business have, where the sales have been handled intelligently, built up a very good demand and have increased their incomes materially. Any truck dealer who will give the matter careful analysis, will realize that the dealer able to sell a prospect a truck, fully equipped with cab and body, is more apt to get the sale than the dealer who must sell only the bare chassis, depending on some local body builder to supply the type of body the customer may want.

Larger Stock Can be Carried in Less Warehouse Space

Heretofore it has been almost impossible for truck agents to even consider carrying a large stock of miscellaneous truck bodies for the various sized trucks and the different demands as to body shapes. But the larger body manufacturers have had their designers concentrate on standardization for some time, and the result is that today a truck agent may stock up on a comparatively small number of designs that will meet the majority of requirements on the part of his patrons. Where the older types of truck bodies were cumbersome and took up much warehouse space, the modern standardized bodies are all of the knock down type and, when crated for shipment, take up very little room. Consequent reduction in freight charges and in storage space necessary in the dealers' warehouses make it possible for the dealer to carry plenty of stock without too heavy a financial outlay. Truck platforms, on which the various types of standard bodies are mounted, do not require crating. This also reduces the freight charges.

It is a well known fact that many men lack the ability to visualize a completed piece of construction in their own mind. To this type of truck buyer the dealer who also carries a stock of truck bodies will especially appeal, for he will be able to show the prospective buyer the particular truck he considers purchasing, fitted with the exact type of body necessary for his business. The customer will not have to guess how the truck is going to look with the body on it. The complete outfit is there before his eyes, and the purchase is almost certain to be consummated.

With this type of buyer, the truck agent who has only the chassis to sell will be seriously handicapped, and in all likelihood the man handling the complete outfit will make the sale.

Quicker Delivery Assured

Another feature to consider in handling standardized truck bodies is the element of quick delivery. If the truck buyer must wait, after purchasing the chassis, for some local body builder to construct a complete new body, give it several coats of paint, etc., he will not, as a rule, be half so well pleased as he will be if he can drive his truck, body, cab and all complete, right from the dealer's store, putting it to work earning money for him on the same day he makes the purchase.

While there is a demand for a wide variety of body types, the majority of truck bodies in actual use come within a very limited number of designs. These designs are the ones which the larger body builders have standardized, and include the platform, stake, grain, live stock, light delivery, and other similar bodies. In the many cities where stock yards and packing houses are operated, the live stock rack body is a ready seller, and these bodies can be sold readily from immediate stock. If the trucks are used for other purposes around their owners' farms, stake bodies or even grain bodies are made to interchange with the stock racks on the same body platform. All of these may be sold direct from the dealer's stock on hand, without delay.

The standardized bodies are very strongly made, well ironed and braced, and are the result of years of experience in truck and body building. Adjustable sills on the platforms make it possible to fit the standard bodies to motor trucks having any width between side frames.

Being built in quantity, the standardized bodies are consequently cheaper in price than the single body orders built by the local wagon shop.

No business man, be he city storekeeper or farm owner, likes delay, and it is a crusty prospect indeed who won't respond to the salesmanship of the agent who is able to deliver to him, immediately, the complete truck, ready to go to work the minute the sale is made.

Body Manufacturers Anxious to Sell Truck Dealers

The manufacturers of standard truck bodies and cabs are doing everything they can to make it easy for truck agents to take on their lines. Large stocks are carried at the factories, so that immediate shipments can be made on dealers' orders, and some of the manufacturers have also established district distribution warehouses, from which shipments may be made that will reach dealers in each district quicker than they would from the home factory. In addition, the manufacturers furnish dealers with a large amount of sales literature, well gotten up booklets, circulars, etc. The dealer's business address is usually printed on these circulars, and as they may be sent out without extra expense along with his truck selling literature and letters, their added business getting value is soon appreciated in the results obtained.

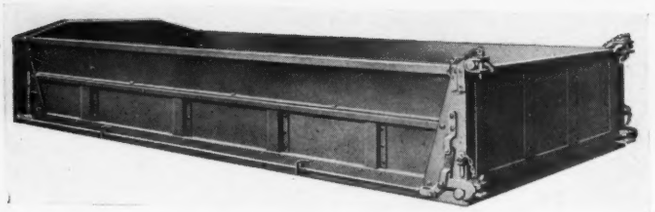
There may be some communities where the demand is so varied that the average range of standardized bodies would not form a successful adjunct to the truck business. But in most communities there is a big market for this type of merchandise, and it would seem that the truck agent who is not taking advantage of this possibility of extra profit is overlooking a good business opportunity. It is well worth looking into, and any of the manufacturers of standardized bodies will be only too glad to furnish dealers with full information as to possibilities of the trade.

Truck Body Review

The following pages are dedicated to the dealer who is anxious to increase his profits and give better service to his customers by handling a line of truck bodies. It is not the purpose of this review to describe and illustrate all the standard, stake, platform and express bodies that are on the market, as practically every body concern can furnish bodies of this nature. The object is to show bodies which are somewhat different from the ordinary, such as combination bodies; dumping bodies; knock-down bodies, etc.

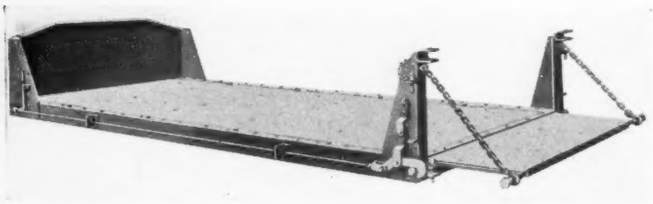
We wish to inform our readers that this review of special bodies will be concluded in our next issue, which will contain descriptions and illustrations of such bodies which were received too late for this issue.

The Body Dimension Tables will prove of special interest to the body builder when figuring on bodies that will be suitable for the majority of chassis or when designing bodies for any particular make of chassis.



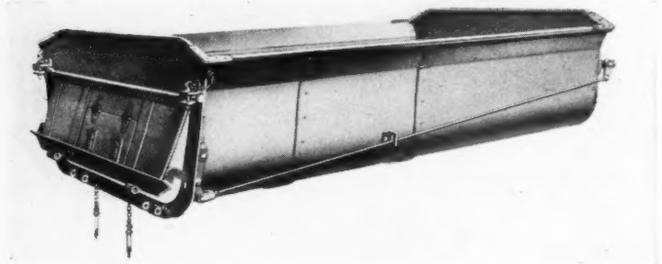
"K & J" Model U Convertible End-Dumping Body

Designed for hauling material of widely variable weight and bulk, such as gravel, coal, lumber, and general merchandise. It is built for use with horizontal hoist, although it can be used with hoist of vertical type. Two sets of side-boards, as illustrated, are furnished, lower side-boards being attached by means of stake pockets.



"K & J" Model U Convertible End-Dumping Body

This shows the Model U body with the side-boards removed and tail-gate open for use as a platform body. Stakes may be placed in sockets for hauling bulky material.

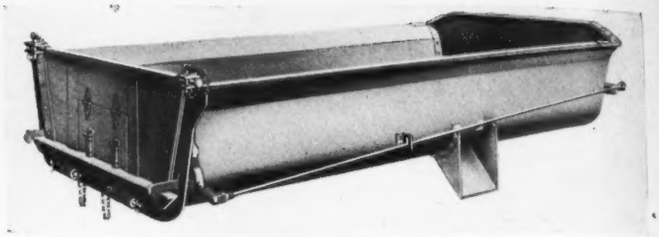


"K & J" Model K-D End-Dumping Body for Coal Hauling

Made in one size only, 200 cubic feet water measure. Designed for hauling coal, coke, cinders, etc., on trucks of five, six, or seven tons capacity. Small sliding door in tail-gate with sack hooks.

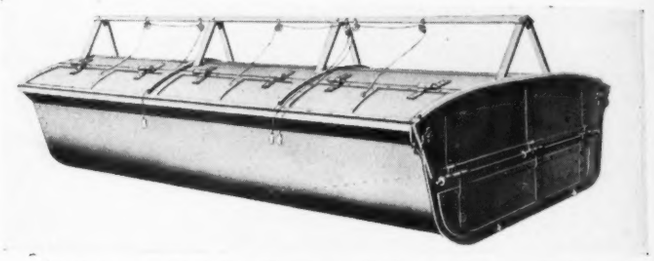
Standard Truck, With Special Arrangement for Carrying Steel Bars and Channels

Note the special arrangement applied on a Standard motor truck, built by the Standard Motor Truck Company, of Detroit, Michigan, for the purpose of hauling iron and steel bars, channels, etc. The body is a standard stake job, with removable front panel so that the extra long pipes can protrude from the body of the truck and be supported at the front end by the special bar arrangement.



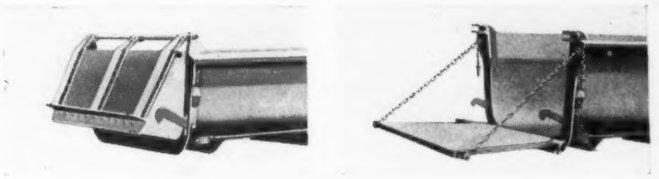
"K & J" Model A End-Dumping Body for Hauling Hot Asphalt

This body is lined with asbestos and is specially built for hauling hot materials, such as asphalt or tar. The body tapers, to permit free discharge of load. Chute on both sides. Four hooks on each side permit the attaching of any necessary covering.



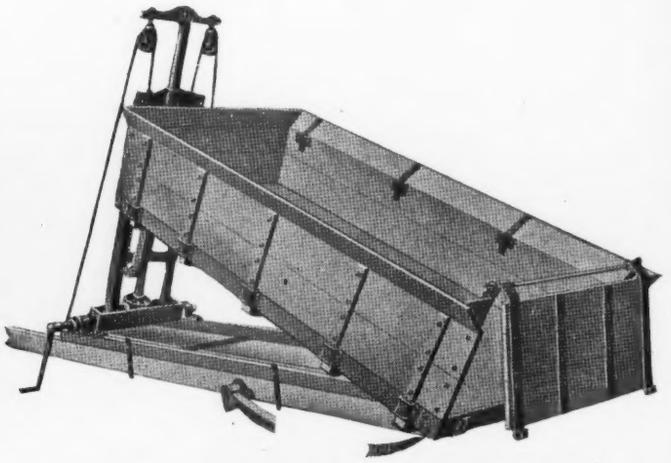
"K & J" Model G End-Dumping Body for Hauling Garbage

A standard model for use in connection with garbage disposal plants. All seams are water-tight. Bottom of body slopes up at rear end with tool-box under floor.



"K & J" Model K End-Dumping Body and Model K-D End-Dumping Body With Double-Acting Tail-Gate

The body on the left is designed for hauling crushed stone, bulk cement, sand, gravel, or any material which may be dumped directly from the unloading point. The other illustration shows the variation of the "K" design, which is designed for use when some of the unloading must be done by hand, as in handling coal, castings, sacked material, etc.



"K & J" Convertible Wood End-Dumping Body

This body is fitted with a simple and easily operated hand-hoisting device, which permits more than a forty degree angle for dumping. Side-boards may be removed, supplemented by stakes, for which sockets are provided. Practically all of the "K & J" bodies are supplied with the adjustable underframe, which was described in our March 1919 issue, page 50. By means of this underframe, these bodies can be attached to any make or size of chassis frame by the use of a wrench. This eliminates all drilling of holes in the chassis frame, transoms, or sills. "K & J" bodies are manufactured by the Kilbourne & Jacobs Manufacturing Company, Columbus, Ohio.

The Dailey Four-in-One Body

The Dailey 4-in-1 bodies come in sizes ranging from one to five tons capacity. They provide the user with a platform body, stake body, express body, dump body with double acting tail gate and a hand hoist.

One man can change the body into any one of the other types without tools, as the change is made by simply fitting the sides into place. The operation requires but a few minutes.

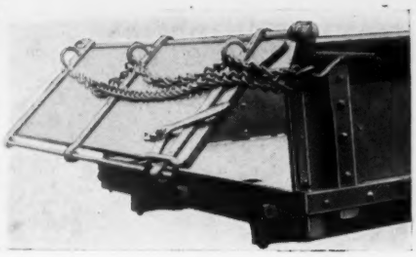
The Dailey hand hoist is very compact, occupying but 9 in. of space on the chassis. It is easily operated, as the effort applied at the crank is multiplied eighty times at the body. A ⅜-in. crucible steel cable, with a breaking strength of 9600 lb., is used. The cable is double in the Dailey hoists, giving it a breaking strength of 19,200 lb.

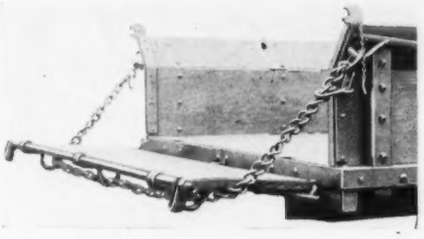
These bodies are built of white oak throughout. The structure where the greatest strength is required is well built of heavy material. The cross bars under the floor are placed close together and give added strength to the body.

The floor boards are easily removed and replaced, if it becomes necessary after long use. Oversize bolts are used throughout instead of lag screws. The stake pockets are flush, protecting them from damage.

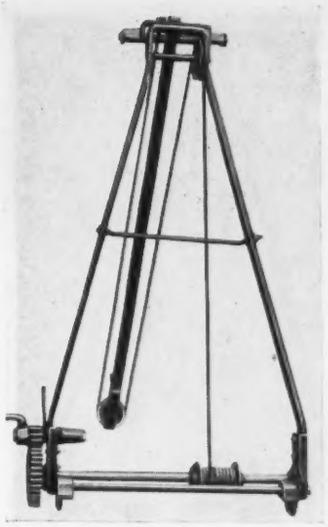
If a truck owner wants a body for one purpose, such as an express body, he can purchase a Dailey body without stakes or hoist, giving him two bodies; an express with a double acting tail gate and a platform body. If at any time he desires to add the stakes and hoist to his equipment, he may do so at small cost.

These bodies are guaranteed for a year. They are manufactured by the Simplex Manufacturing Co., Conneautville, Pa. H. R. Dailey, Carroll Ave. and Sacramento Blvd., Chicago, is the U. S. sales agent.

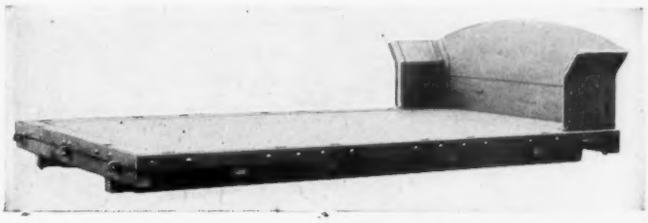




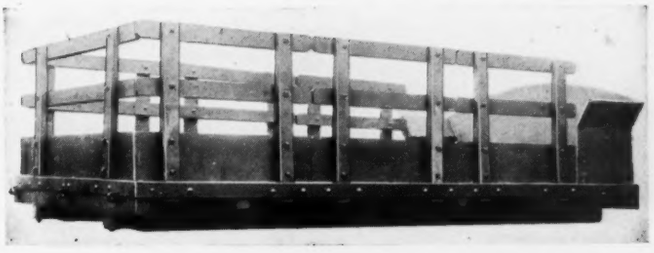
Two-Way Endgate Hinged From Top or Bottom at Will



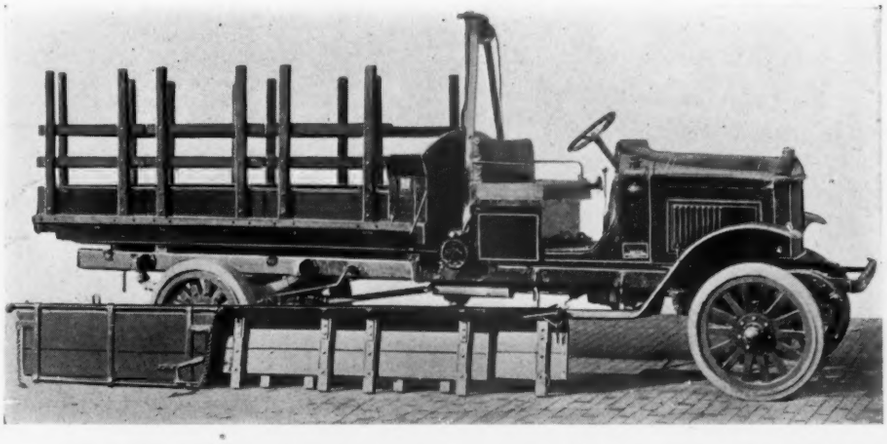
This Hand Hoist Occupies But Nine Inches of Space on the Chassis



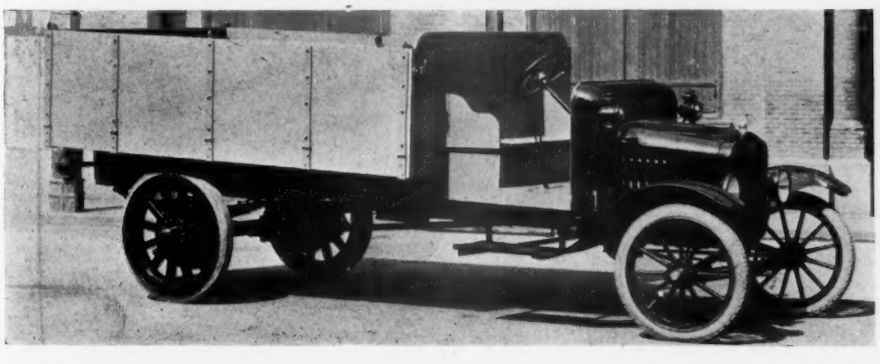
Platform Body Formed by Simply Removing Sides, Which Can Easily be Done by One Man in Three Minutes



Dailey Body is Made to Fit Any Size or Make of Chassis From One to Three and a Half Tons. Body 90 x 52 Inches to 138 x 58 Inches, With 15-Inch Sides, and Two-Way Endgate



The Dailey Four-in-One Body Complete, Showing the Stakes in Place. The Stakes Are 42 Inches High. As a Dump It Can be Operated by Hand by One Man in Forty Seconds



This Outfit is Being Used by the British Forces in Siberia

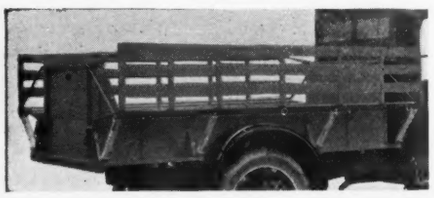
By means of a Truxtun Unit this Ford was converted into a two-ton truck. The body was built in Shanghai. The exporters, Dodge & Seymour, of New York, did the work of converting the Ford into a truck, and of mounting the body at their Shanghai headquarters.

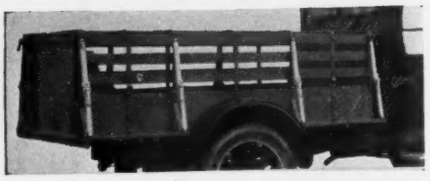
A Somewhat Out-of-the-Ordinary Body for Hauling Road Material

J. A. Gould, Windsor, Vt., operates two two-ton Federal trucks fitted with special side-dumping bodies. These bodies are so arranged that the sand and gravel can be dropped in small or large quantities, wherever desired. The low bodies are easily loaded by hand-shoveling at the sand-pits.

This Truck Brings the Market to the Home

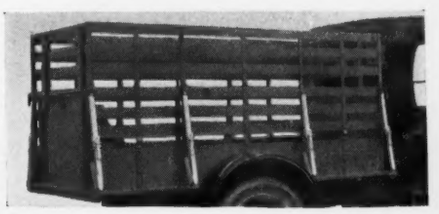
The Four Seasons Grocery Company, Dallas, Texas, is operating this outfit, which is in reality a portable grocery store. The body is 14 feet long, 6 feet wide, mounted on a Dodge chassis. A complete line of meats, groceries, green vegetables, and everything else typical of the grocery store is carried, and the money is paid as the patrons leave the car. The car adheres to a fixed schedule.

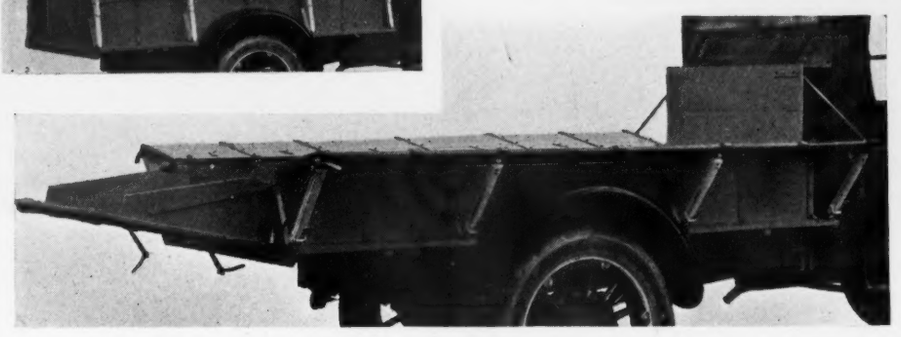


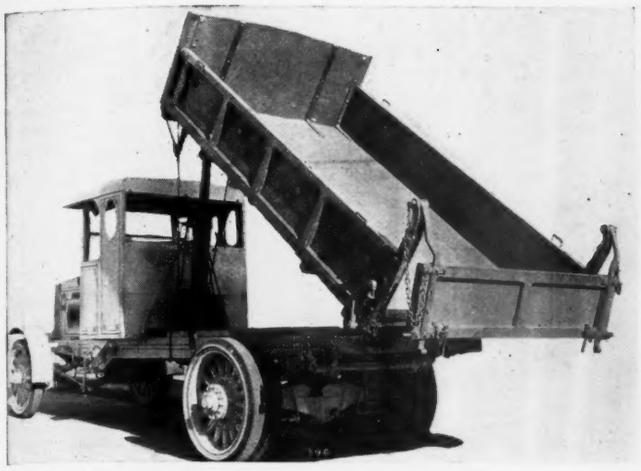


The 8-in-1 American Convertible Motor Truck Body. Built by the American Wagon Company, Dixon, Ill.

This body is built especially for farm use and is furnished in various sizes, listing from $110 to $137.50. The feature of this proposition is that eight bodies are furnished in one, while the range of sizes permits the use of this body on any make of motor truck from ¾-ton up to 3-ton capacity. The body illustrated is mounted on an Oldsmobile ¾-ton Economy truck. It is 9 feet in length and 45 inches in width, and has a capacity of 61 bushels of small grain. Weight of the body is 690 pounds. The large illustration shows the flat rack with the scoop-board down, this position being adapted for hauling fruit and vegetables in crates, grain or produce in bags, baled hay, etc.







The Metropolitan No. 40 Combination Dump Body. Built by the Metropolitan Body Company, Bridgeport, Conn.

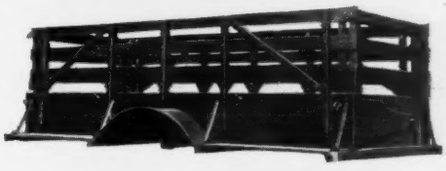
This body is built in two sizes. The No. 40 is built for 5-ton capacity trucks. Inside dimensions are: 10 feet 6 inches long, 6 feet 6 inches wide and 18 inches deep, capacity 4 cubic yards. If bulky material is carried, the body can be equipped with additional 12-inch flare-boards and can also be equipped with a 4-foot rack, making a general trucking outfit. The body is lined with steel and has an automatic, double-acting tail-gate, which automatically releases when hoist raises the body and automatically locks when body is lowered. The No. 41 body is built for trucks of from 2 to 3-ton capacity. Inside dimensions are 10 feet long, 5 feet 6 inches wide and 15 inches deep; otherwise constructed along the same general principles as the No. 40; it has a capacity of 2½ cubic yards. Metropolitan bodies are carried in stock in Boston, Bridgeport, New York and Philadelphia. The prices on Metropolitan bodies allow for a fair discount to the dealer.

Moline-Commercial Bodies and Farm Bodies

The Moline Plow Company manufactures a series of standardized truck bodies for Ford ton trucks and the Model T chassis in one of its large Freeport, Ill., factories. This plant is turning out commercial bodies at the rate of 40 a day. The equipment of this plant includes great batteries of kilns for drying lumber, special sand blasting rooms to prepare bodies for painting, the latest fender and body shaping machines, special electro and acetylene welding equipment and numerous other advantageous facilities for rapid production of bodies.

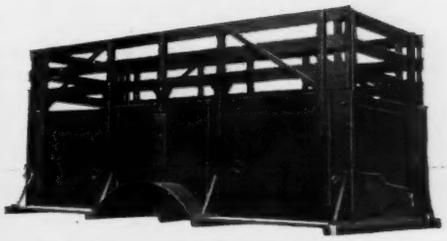
The Moline line of bodies for the Ford ton truck and Model T chassis comprises platform and stake bodies, completely enclosed steel panel bodies, express bodies of open type and canopy covered top with all-season driver's cab. The various units are standardized so that with no special work, extra all-season cab, top, boxes, etc., can be added to any model not carrying them as regular equipment.

The leaders of the Moline line are Models No. 422 and No. 415, in stake and platform bodies for farmers and general trucking. Model No. 419 is an enclosed panel body for light delivery, florists, merchants, etc.



Moline Farm Body No. 422, for Ford Ton Trucks

Also showing all-season driver's cab, with built-in windshield. The main body panel is 13 inches wide, the top box 10 inches, and the tip-top box is 9 inches, a total of 32 inches. The body is 96 inches long, 54 inches wide; has a capacity of 75 bushels of grain. Body can be equipped with stock-racks.



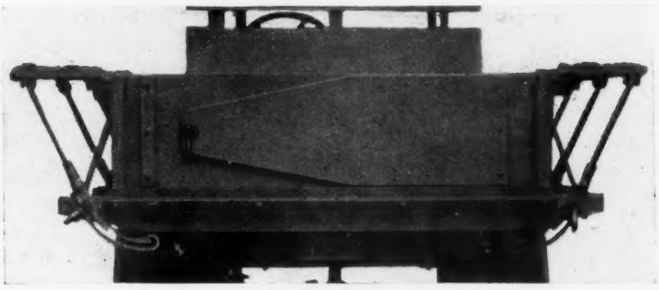
The Luverne Combination Farm Body. Made by the Luverne Automobile Company, Luverne, Minn.

This body will fit practically any make of truck. It is designed for hauling large live stock, hogs and small grain. The length of the body is 10½ feet, width 3 feet 10 inches, and height 4½ feet. One of the features is a substantial running-board, with a heavy sheet-metal fender, which protects the body from mud and also permits the operator to stand on the board when loading or unloading. The lower section of the body is completely assembled and the upper sections are detached and crated together for convenient shipping. The price of the body is $90.

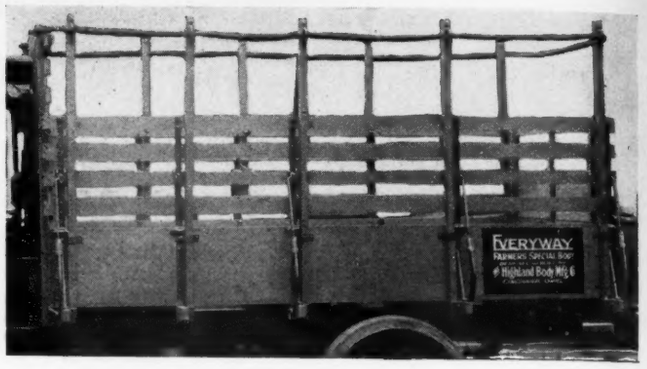
The Everyway Body Designed Especially for the Farmer

The Highland Body Mfg. Co., of Cincinnati, O., announces a new body designed for the farmer or country express man. A special feature of this body is that it is self-contained, as all parts are carried on the truck at all times, so that the user can take a load of stock to town and bring back a load of merchandise, in this way always being prepared for a return load with a body that can be adjusted to suit the conditions.

The accompanying illustration shows some of the changes which can be made with this body. The design has been worked out so that it will stand severe service and at the same time be sufficiently light to be used on the average farm truck of 1½- to 2-ton capacity. The body is being furnished in the following sizes, which are inside dimensions: 62 x 96, 62 x 108, 62 x 126 and 62 x 144—will fit any 1½- or 2-ton truck on the market.



This View Shows the Locking Arrangement and Supports for the Adjustable Sideboards.



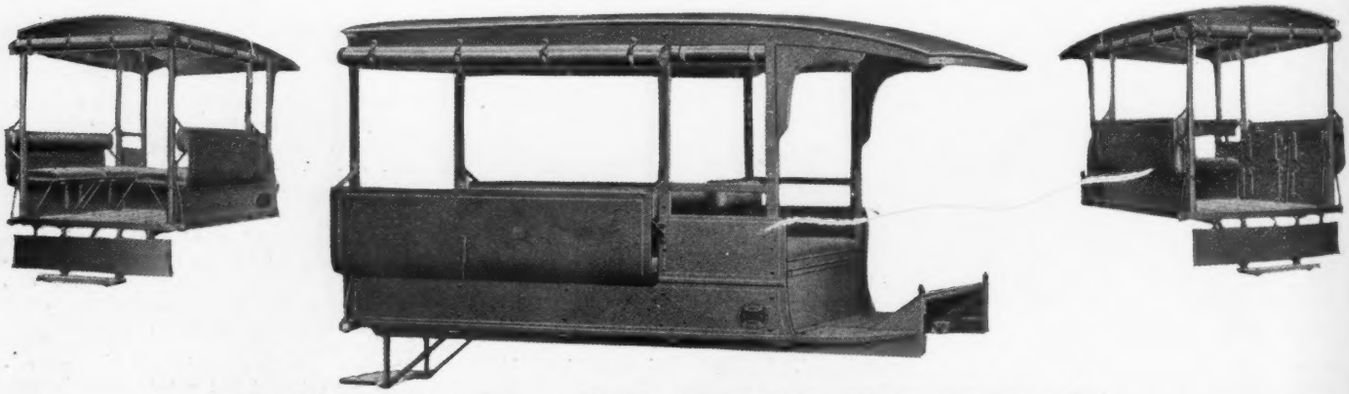
Arranged for Hauling Cattle

How It Looks When the Seats Are Made Up

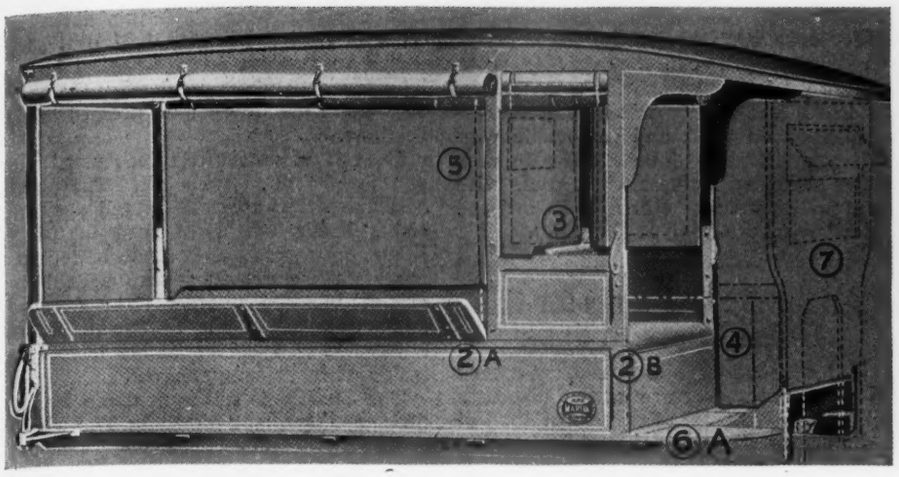
The "Everyway" Arranged for Hauling Grain

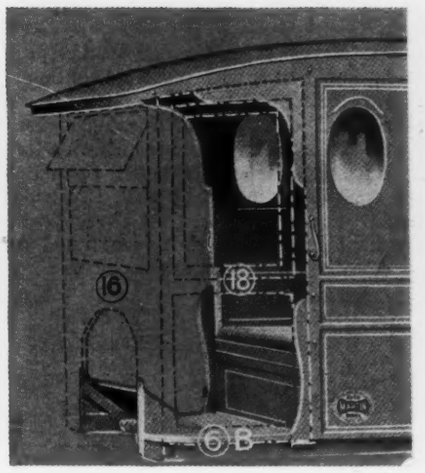
Martin Combination Jitney and Commercial Body

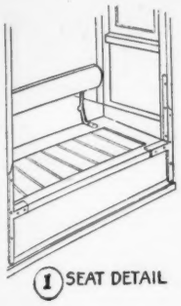
The accompanying illustrations show views of a combination jitney and commercial body built by the Martin Truck and Body Corp., York, Pa. Note how the seats can be adjusted to suit special conditions. Seats are divided to permit the folding of one or all at one time and when not in use, are folded up at the sides and securely held in place. The full panel back makes a splendid appearance and forms a protection for the passengers. The dimensions of the body inside are 62 in. long, 44 in. wide, 58 in. high, depth of panel 9 in. The body has a capacity of ten passengers and weighs 350 lb. net. Seats and backs are upholstered in artificial leather; the curtains are black oil duck. Besides building a complete line of standard, bus, stake and panel bodies, this company has out a new line of convertible bodies with standardized and interchangeable parts designed especially for use with trucks and truck units of every make. The feature of these bodies is that the parts being standardized, the bodies can be readily assembled and shipped without delay. These convertible bodies permit the merchant to buy extra parts and enclose the body or remove the enclosure as the

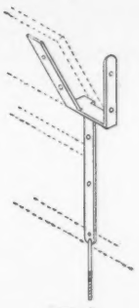


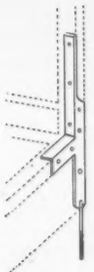
The Martin Combination Jitney. If Desired, a Few of the Seats Can be Used at a Time

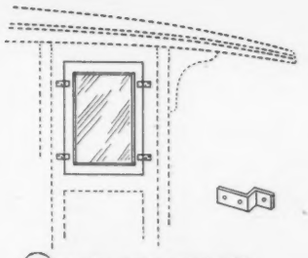


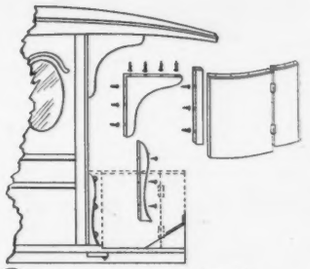



1 SEAT DETAIL

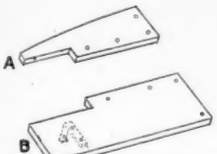

2A SPECIAL FLARE-BOARD IRON


SPECIAL POST AND SEAT IRON 2B

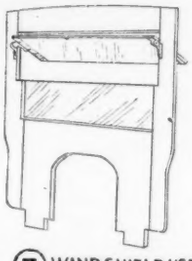

3 SASH AND IRON FOR ATTACHING TO SIX POST JOBS *INSIDE VIEW*

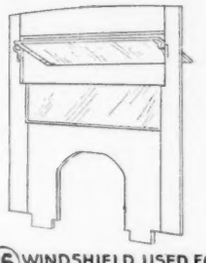

4 FORE DOOR AND MANNER OF ATTACHING

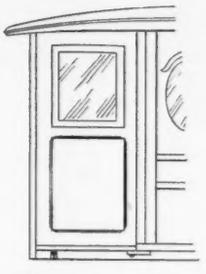

5 CURTAIN FOR BACK OF DRIVERS SEAT ON FOUR AND SIX POST BODIES

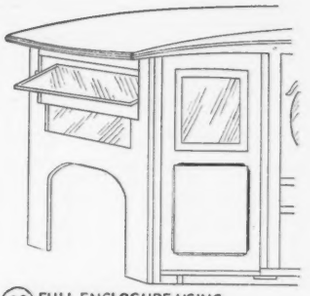


6 STEP BOARDS
A – FOR FORE DOORS
B – FOR FULL ENCLOSURE


7 WINDSHIELD USED WITH FORE DOOR


16 WINDSHIELD USED FOR FULL ENCLOSURE


18 FULL SIDE DOOR ENCLOSURE FOR LEFT SIDE


20 FULL ENCLOSURE USING #16 WINDSHIELD, #18 LEFT SIDE AND FULL HINGED DOOR FOR RIGHT SIDE

The Martin Convertible Body and the Various Parts Which Are Used for Making an Enclosed Job

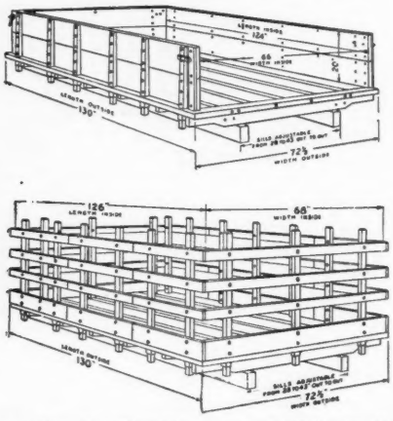
case may be, thus keeping his delivery service adjusted to the conditions of the weather or the demands of his business without the need of maintaining several types of bodies. The illustration shows the various parts which can be used in combination with either the six-post cab or panel bodies, while the dotted lines show the method of attaching the various parts. The panels of the Martin All-Season body are screwed on from the inside.

A Midsummer-Night's Dream in 1919

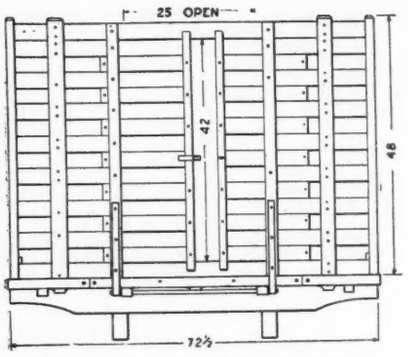
A five-ton Fageol truck pumping the almost extinct juice of the grape from a special tank body into a wine car. Power from the transmission is used to run the pump. This method is also used to pump the wine from the vats at the winery into the truck tank. Over a hundred thousand gallons of California's choicest were handled in this way during the season. Truck manufactured by Fageol Motors Company, Oakland, California.

The Parry Line of Bodies

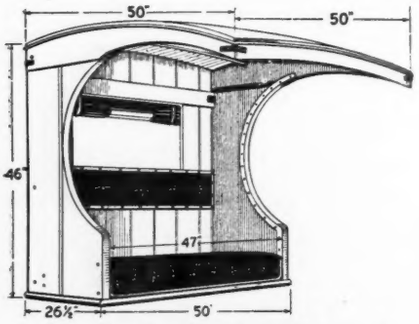
The Parry Mfg. Co., of Indianapolis, Ind., has for years built an extensive line of standard business bodies for regular Ford chassis and Ford extension units. It includes about twenty-five light models, with panel, stake and open bodies, each one specifically suited to a particular hauling need. All these bodies are kept in stock and it is claimed can be supplied on 24 hours' notice.



Parry Combination Express and Stake Bodies



Sliding Door on Stock-Rack Endgate



Cab Furnished With the Universal Multi-Service Body

A few months ago this company announced a new line of combination bodies, known as the Parry Universal Multi-Service Body, illustrations of which appear herewith. Complete details of this body were given in our December, 1918, issue, page 54.

The Parry Grain Body No. 630, which was described and illustrated in our February 1919 issue, page 12, is built specially for hauling loose grain, and has a capacity of 65 bushels. It is also adaptable to a very large number of other farm uses.

The Parry All-Season Truck Cab provides cosy comfort for the truck driver in winter, yet can be quickly converted into an open cab for summer use. It has a ventilating windshield, removable door on right and removable window on left side. The small side windows swing up inside against roof. Cab is supplied separately or may be ordered with any of the bodies using cabs.

Armored Steel Body for the Federal Reserve Bank

Not satisfied with the ordinary means of transferring securities, the directors decided to call for designs of bodies suitable for the purpose and in keeping with the dignity of their institution. Out of approximately fifteen submitted, the one submitted by Jacob Press' Sons, Chicago, was accepted. The design was one that Jacob Press had in mind in anticipation for just such service in view of the many payroll hold-ups in large cities.

The extreme dimensions of the body are: Length, 20 ft. 2 in.; width, 7 ft. 3 in.; height, 9 ft. 4 in. The weight of the complete outfit is 5 tons.

The driver's compartment is separated from the main body compartment by a double steel wall. This wall is filled with compressed felt. There is an opening large enough to get range at any part. There is a barred door on the driver's side and a steel door on the inside. This was to protect the driver from inside in case of emergency as well as having positive communication in addition to the old reliable speaking tube. All doors are provided with Yale locks, as well as heavy bolts on the inside.

Ventilators are provided on both sides. All windows in main compartment are of wire glass set in steel frames and can be raised and lowered. The lighting arrangement consists of 3 dome lights. Seating capacity is ample for 12 large men.

The space under the seats was made large enough to permit carrying ten large steel boxes for carrying the securities. Seats and lazy backs are of the spring box frame type, and covered with rattan, and are hinged to permit raising to remove boxes.

The upholstering in the driver's compartment is of leather. Floor is of heavy oak covered with battleship linoleum. This is ironed off with half oval steel strips to prevent wear by steel boxes. The cross-members supporting the body are of special design pressed steel sections.

Roof is of steel plate inside and out, and is also lined with felt. The plates and mouldings are well riveted together, rivets being closely spaced for tight joints. All windows in main body compartment are provided with special designed window guards. The gasoline supply, as well as the electric lights, are controlled by special switches located on inside of main compartment.

The chassis is a Giant, made by the Chicago Pneumatic Tool Co. The wheels are of the Sewell type and are equipped with Goodrich de Luxe tires. The fenders are special and in keeping with the general design of body. The steps are automatic in operation with the opening and closing of the doors.

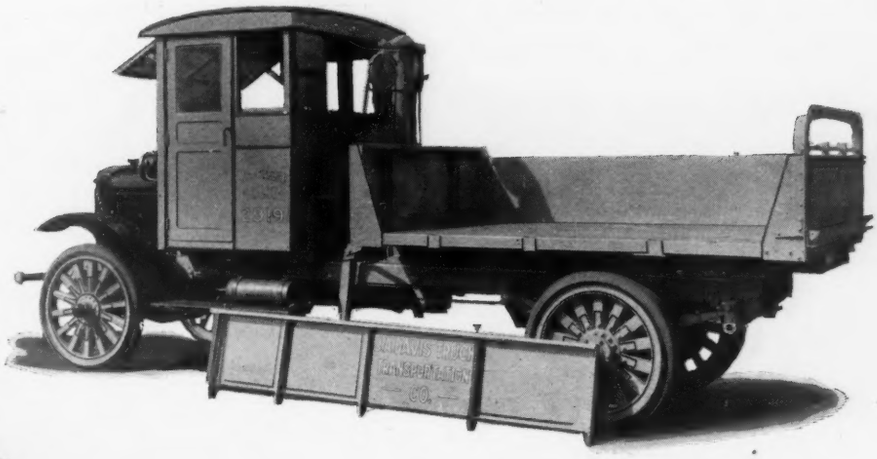
The Clark All-Season Cab. Made by the J. L. Clark Manufacturing Company, Oshkosh, Wis.

This cab was designed to give comfort to the driver in all seasons. This is a standard job which will fit the majority of standard trucks, by merely changing the distance from dash to back of seat. The over-all dimensions recommended are: 56 in. in width, varying the distance from windshield to back of cab from 47 to 40 in. The windows slide up and down. The doors are attached with pin-hinges, permitting quick removal during warm weather. This company also makes a complete line of standard cabs with open sides and glass panels, as well as a complete line of standard stake and express bodies. A new catalog, just issued, gives complete details and specifications of the entire line.

A Special Armored Truck Body Which is Burglar-Proof.

The Ell-Kay Combination, Flat Platform, Removable Side-Dump Body

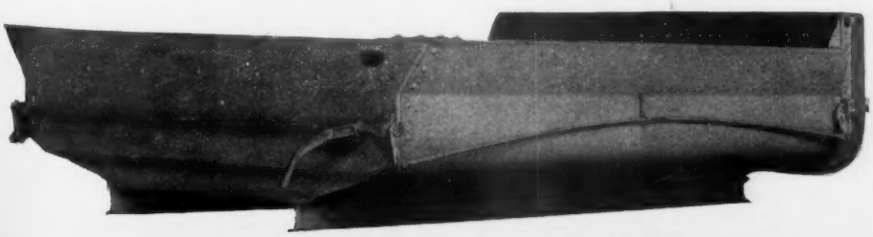
The Ell-Kay Mfg. Co., 1722-30 Tracy Ave., Kansas City, Mo., announces a new dumping body, illustrations of which are given herewith.



Two Views of the Ell-Kay Combination Body

The body is made with a No. 10 steel platform, mounted on 3-in. cross I-beams and two 4-in. longitudinal I-beams for lifting members. The sides are made of No. 12 steel reinforced with 2 x 2 x 3-16-in. angles. These sides are formed in a powerful press so as to give the maximum strength to the material used. The rear end, including end gate and supporting angle, is removable. The gusset which stays the supporting angle, is riveted to the latter, and the complete member is bolted with four ½-in. S. A. E. bolts through the turndown flange of the body and suitable brackets attached to the rear cross I-beam to meet the floor of the body proper. The sides fit in grooves on the front end gate, which is permanently attached to the body, and are held in place in the rear by overlapping the gusset stay. Two ½-in. bolts with tail nuts hold the sides down and prevent rattling of same when on the road. They also make the sides tight to prevent the loss of sand and other fine material when used to haul this material.

The Wood Hydraulic Hoist



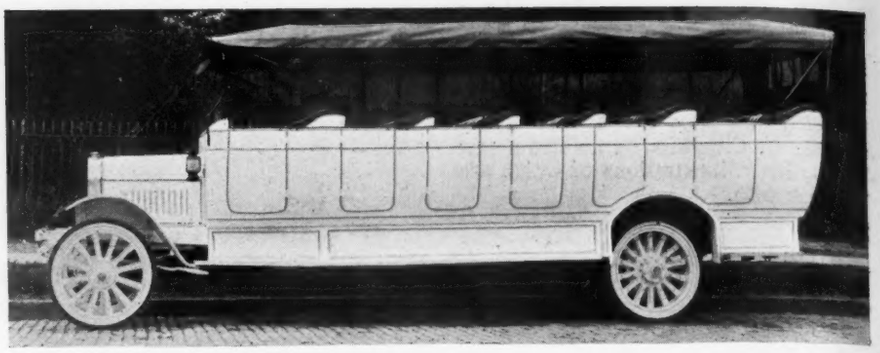
The Wood Steel Dump Body, Which is Made in a Number of Sizes

Wood Hydraulic Hoist and Steel Dump Bodies

Hydraulic hoists and steel dump bodies are so universally used and are so commonly seen that the dealers and, in fact, contractors do not give them the investigation and thought that they should. They know that dump outfits work but it is not generally known that a dumping unit saves a great deal of money. The Wood Hydraulic Hoist and Body Company, of Detroit, have been making hoists and steel dump bodies for years and have given the dumping proposition a great deal of study.

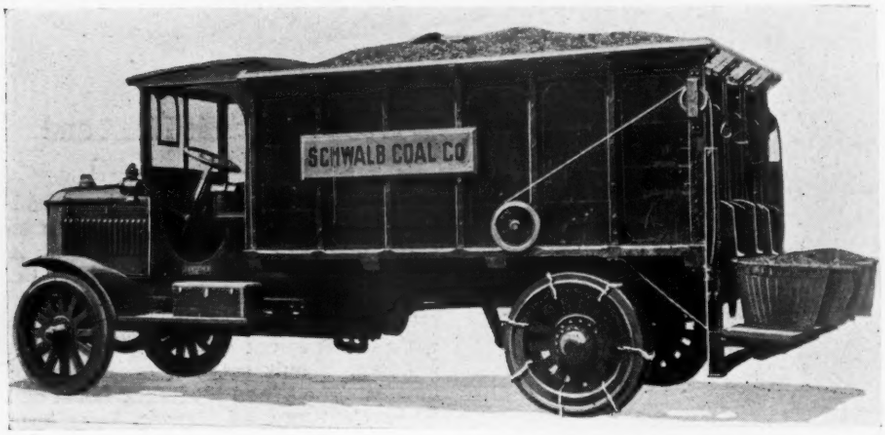
One essential factor that must be adhered to is the proper load distribution, so that the chassis is not subjected to any undue strain. Likewise, with the proper load distribution, no undue strain is placed on the hoist which goes to make a perfect dumping unit. The makers state that with a Wood hoist it is possible to dump a capacity load in 15 seconds. After the commodity has been dumped, the driver can start immediately without waiting for the body to come back into position. This seems a small item but in figuring the cost of a job every minute counts.

In road building dumping units are absolutely necessary. When a restricted tail-gate device is used in connection with a dump body, sand or gravel can be spread along the road in any desired thickness. This, in itself, saves dollars in labor and time. In using an end dump body, the commodity can be placed just where it is needed and, by use of a vertical hoist located directly behind the driver's seat, the proper lift is obtained. The Wood hoist can be installed on any make of chassis and, if at any time the dump unit is not needed, it may be taken off the chassis very easily.



Maccar Bus, Which Seats Thirty-Five Passengers

Thirty-five of these buses, which were built by the Maccar Truck Company, Scranton, Pa., are in operation in New York City, the majority of them running between New York and Coney Island. A few of these buses are built to carry forty-two passengers. A great deal of the sight-seeing business in New York is being done by these buses, as there are three companies using them.

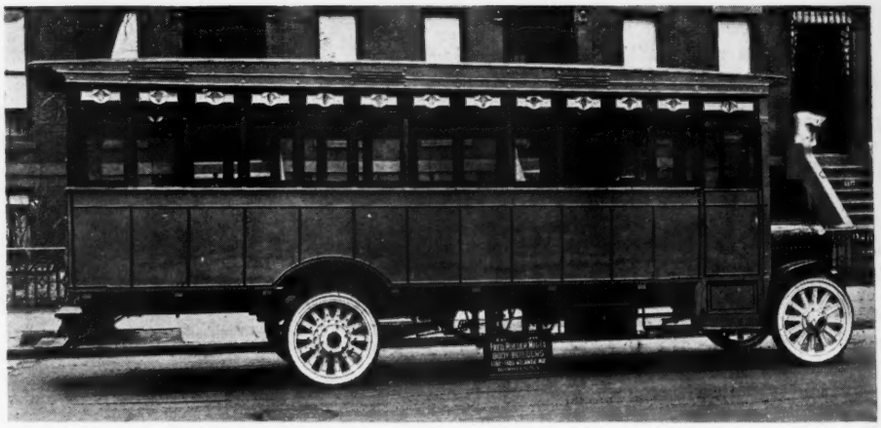


Here is Something New in Bodies for Handling Coal

This body is mounted on an Armleder chassis. The body has a false floor which slants downward from front to rear so that when the tail-gate is lifted, the coal will slide out by gravity. This construction eliminates a hoist. The platform arrangement at the rear is particularly interesting. When the baskets are full the platform is raised by motor power to the height of a man's shoulder, thus eliminating a great deal of unnecessary lifting. The Schwalb Coal Company has a fleet of Armleder trucks in operation equipped with these bodies.

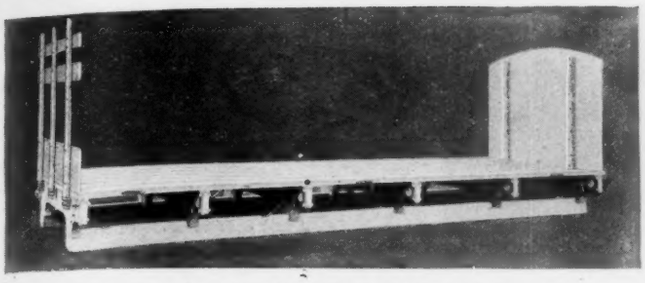
Lunch Body Used by the New York Police Department

This body was built by the Fred Roeder Mfg. Company, 1392 Atlantic Avenue, Brooklyn, N. Y., for the police department of New York City. It will accommodate twenty men at one time, and is equipped with coffee-urn, lunch closet, and is steam-heated from the exhaust of the engine. The body is modernly equipped throughout.

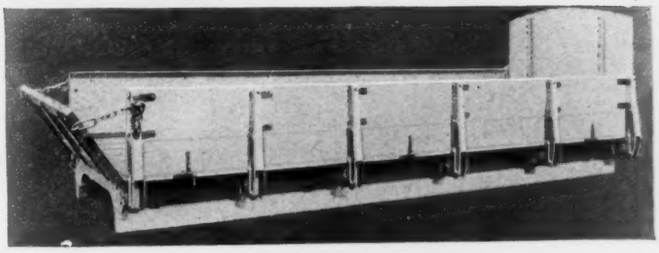


Twenty-Passenger Bus Body Mounted on Oldsmobile Chassis. Built by the Unit Manufacturing Company, 922 Commonwealth Avenue, Boston

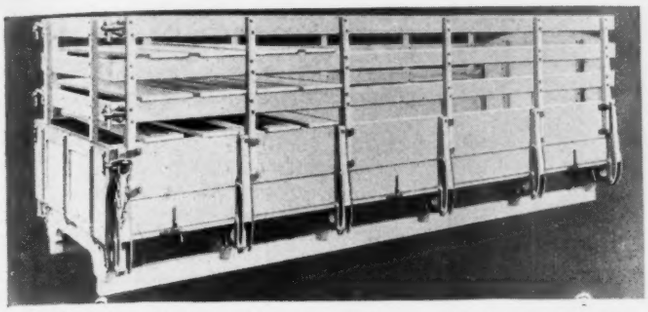
This shows one of the many designs of bus bodies, built by this concern under the trade name of "Cotton-Bodies." This body has a capacity of fifteen to twenty passengers. The specifications include one-man door-control; emergency rear door; dome light; push button; spring and curled hair cushions; high-grade imitation leather upholstery. The body measures twelve feet from dash to rear end.



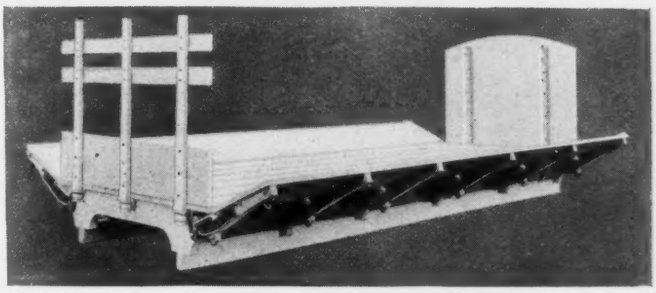
The Republic Body Adapted to Hauling Stone and Other Heavy Material



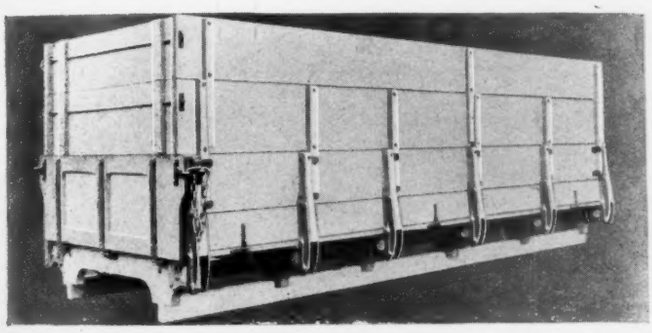
Body Arranged for Hauling Coal, Dirt, Gravel and Grain, Loose or in Bags



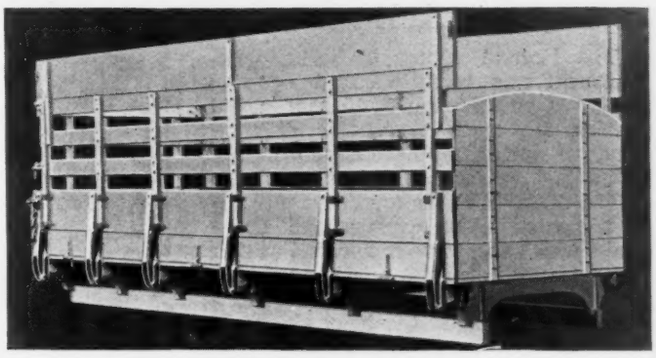
Combination Stock and Basket-Rack Box-Body for Hauling Hogs and Sheep, Also for Truck Farmers' Use, Hauling Fruits and Vegetables in Baskets, Boxes or Crates



The Body as Arranged for Hauling Hay, Wheat, Oats, Cornstalks, Etc.



Arranged as a Three-Section Tight-Removable Side Box-Body for Hauling Barnyard Fertilizer, Melons, Cabbage, Bulky Produce, Etc.



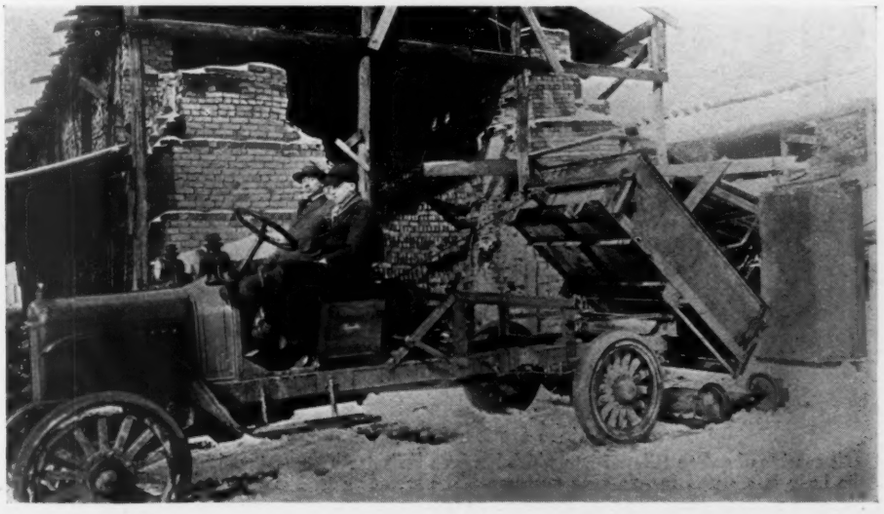
Cattle Rack Arrangement for Hauling Cattle; Also Can be Used for Transporting Cotton

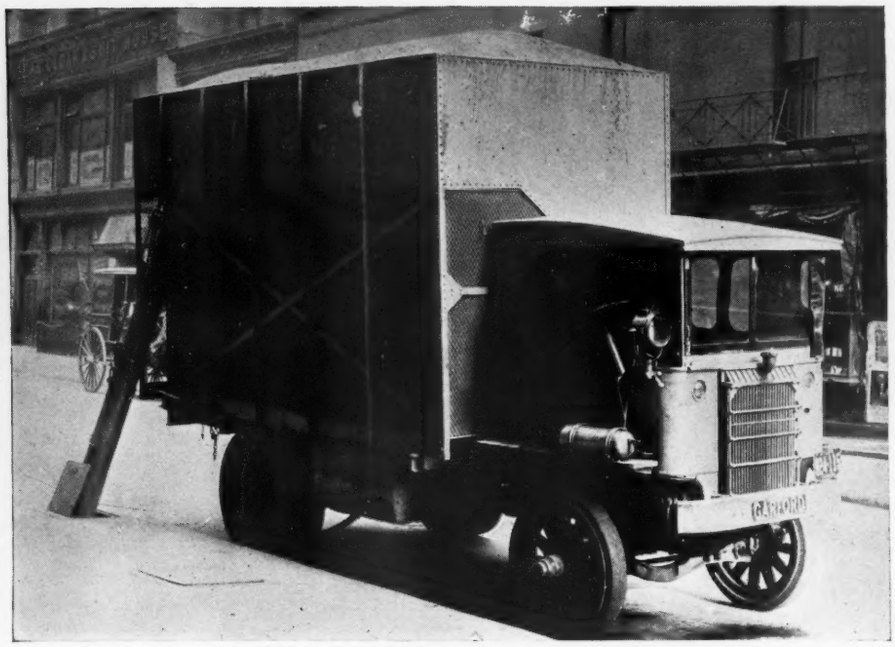
The Republic Standard "All-Purpose" Farm Body

The Republic Motor Truck Company, Inc., Alma, Mich., recently announced a new body designed particularly for the farmer, which gives the farmer a wider range of use for his truck. This body can be quickly converted for different uses to cover the whole range of farm hauling. Eight complete types of bodies are combined in one, the change from one type of body to another can be made in a few minutes. This body is made in two sizes, No. 1, 9½ feet long, selling at $175, and No. 2, 11½ feet long, listing at $200. The body is well made and thoroughly ironed so as to prevent rattling. These bodies are painted in the lead ready for shipping.

Fontaine Detachable Body for Handling Bricks or Any Other Heavy Material. Built by the American Truck & Body Company, Martinsville, Va.

This is a special body designed for handling bricks or any heavy material that requires careful loading or stacking. This body was described in our April, 1919, issue, page 10. In that issue, through typographical error, the address was given as Martinsville, Pa. It should have read Martinsville, Virginia.





Motor-Driven Power-Blower Removes Ashes From Cellars

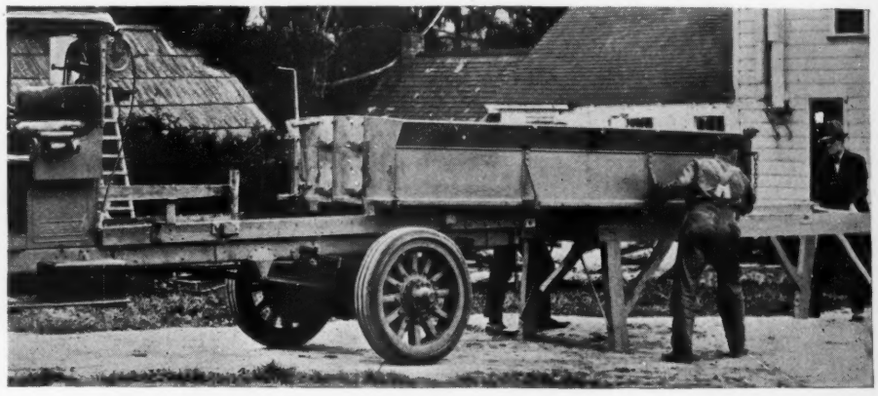
This apparatus, which is being utilized in some of the larger cities, removes ashes from cellars without raising dust. The blowing device of thirty-nine horse power is operated direct from the engine of the Garford truck upon which it is mounted. Not only does this device eliminate the dust element but it also reduces labor to a minimum. The outfit illustrated is the property of Ash Removal, Inc., of New York City.

Unique Body Designed for Use on Large Estate

The Federal Motor Co.'s body department was recently called upon to design a combination body that would render the truck useful for different kinds of work around the large estate of Chas. S. Wheeler, at McCloud, Cal.

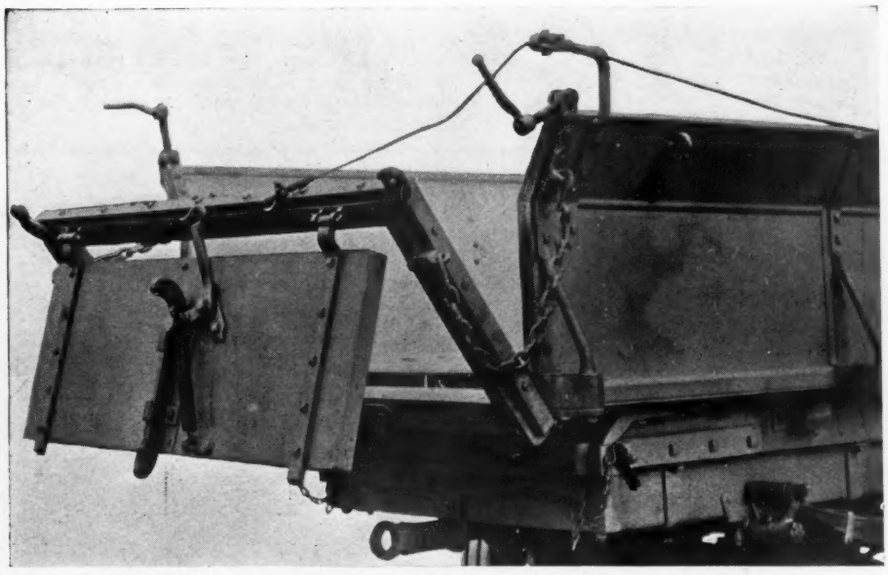
The demands of the owner were to design a combination express and dump body, which was to be removable, so that the flat bed of the truck could be used for hauling large and cumbersome commodities. The result is the body shown in the accompanying illustrations.

The express or delivery body, equipped with a drop tail gate, is zinc plated, steel lined and constructed to be leak proof and is readily adaptable for loose materials such as sand, gravel, etc., or for the purpose of hauling merchandise.



These Bodies Can be Removed From the Chassis in Four Minutes

The frame of the truck is equipped with rollers so that the body can easily be rolled off the chassis onto the receiving stand by two men



The Double-Acting Tail-Gate

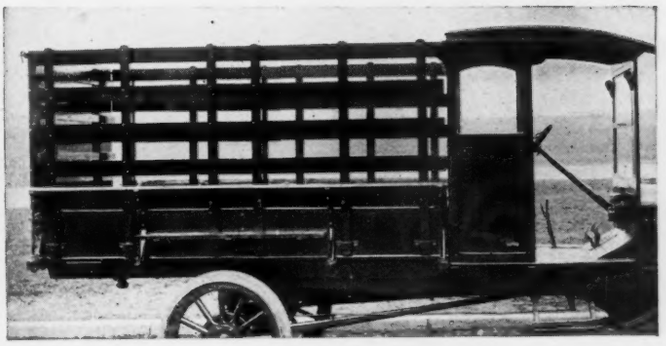
This consists of a drop tail-gate into which has been built another gate that is used for spreading, while the body is elevated for dumping purposes. The spreading gate is operated from the driver's seat. Note the specially designed spring drawbar for use with trailers.

The body is so constructed that it can be easily removed from the chassis, as the frame is equipped with rollers. When the body has been removed from the truck chassis the specially constructed flat bed can be used to haul logs or other large and cumbersome articles. The under body is equipped with rollers and skid sockets on either side and rear to permit of the handling of heavy materials which are rolled or skidded over these rollers into place on the truck. The heavy materials are lifted or drawn into place by motor power through the use of the hoist gables.

The truck can also be used for road work, being equipped with a special hydraulic hoist which raises the body to an elevated dump body position. The double acting tail gate, which consists of a drop tail gate into which has been built another gate, is used for spreading when the body is elevated for dumping purposes.

Hesse Model 51, Open Express Body. Built by the Wm. G. Hesse & Son Manufacturing Company, Leavenworth, Kans.

Loading space 106 inches long, 45½ inches wide, 12 inches deep, with flare-boards; full chain endgate. Openings cut in wings and body equipped with stake pockets for receiving special stock-rack, or extra top side-boards for grain body. Painted dark green. Model No. 61 cab top, sides made of wood fitted with double-strength glass lights, roof slatted and covered with black oil duck; roll-up back curtain with large celluloid lights; lazy back and full-width cushion covered with heavy imitation leather. Floor boards furnished with cab. Built-in windshield with filler board, ventilating type, can be furnished with or without cab.

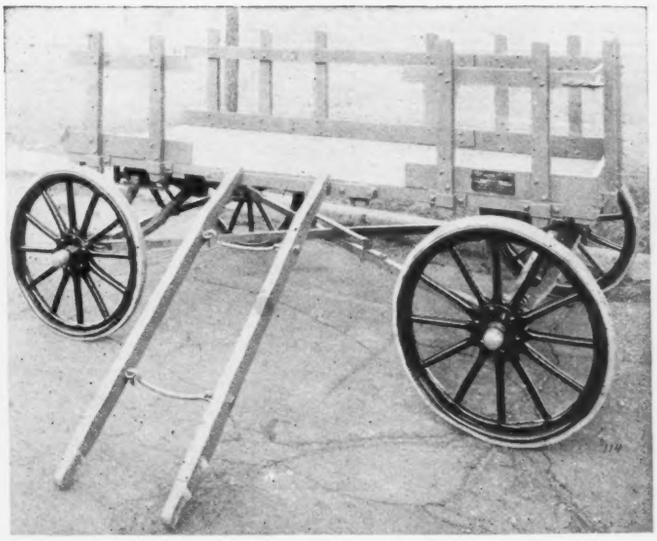


Same as Hesse No. 51, Open Express, With These Exceptions:

Body is equipped with 4-foot stake-rack for hauling cattle, which is made up with five hardwood slats on each side of body; bolted to stakes and arranged removable in two sections on each side. Endgate solid slatted for loading cattle and is built full height of stakes; when body is furnished complete with stake-racks, mud-boards are furnished with same, which are attached to side panels of body.

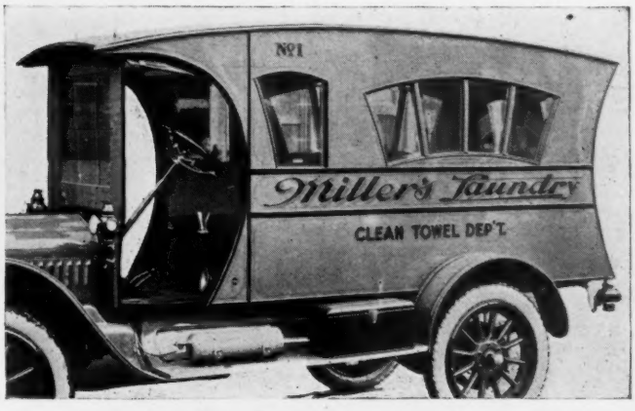
The Economy Body Shown in Two Positions. Built by the Providence Body Company, Providence, R. I.

Economy steel dump bodies are manufactured by the Providence Body Company, for which the Economy Body Sales Company, of 405 Lexington Avenue, New York City, are sole distributors. This body is designed specially for contractors, road builders, coal dealers; in fact, anyone that has use for a dump body, any part or all the time, that this truck is in use. The body is 8 feet 6 inches long, 4 feet wide and 14 inches deep below the flare; the flare is 6 inches in width. The capacity of this body is 2 cubic yards on a level with the top of the flare. The body is constructed of No. 12 gate steel throughout and is shipped complete with the hoist and truck frame in one unit. It is equipped with a worm-driven type hand-hoist.



Hesse Special Stake Body for Trailer Chassis

Size 90 inches long, 40 inches wide, 24 inches high; stakes connected with two hardwood slats and arranged in three sections, removable on each side, with single section on each end; the rear stakes are arranged proper length and size, so that it can be used as a skid for unloading barrels from either side or end. Body is mounted on Hesse 10F trailer. This type of body can be furnished on any Hesse model of trailers. Capacities range from 800 pounds to 5 tons.



A Panel Body of Unique Design. Built by the Kratzer Carriage Company, Des Moines, Ia.

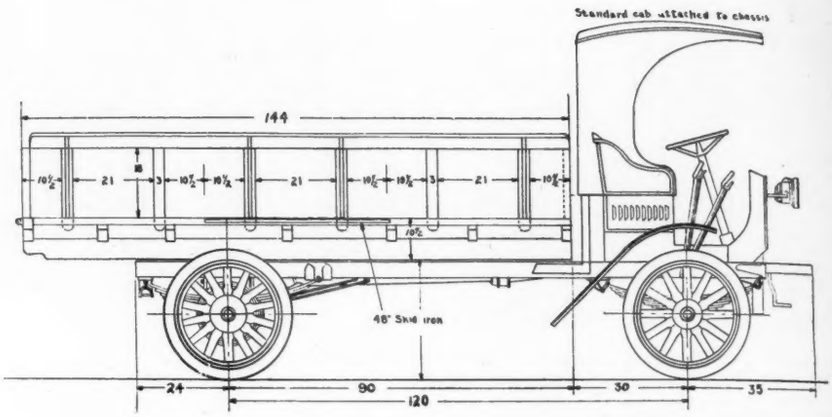
This is a specially-designed laundry body. The panel effect is somewhat characteristic of the cubist's art

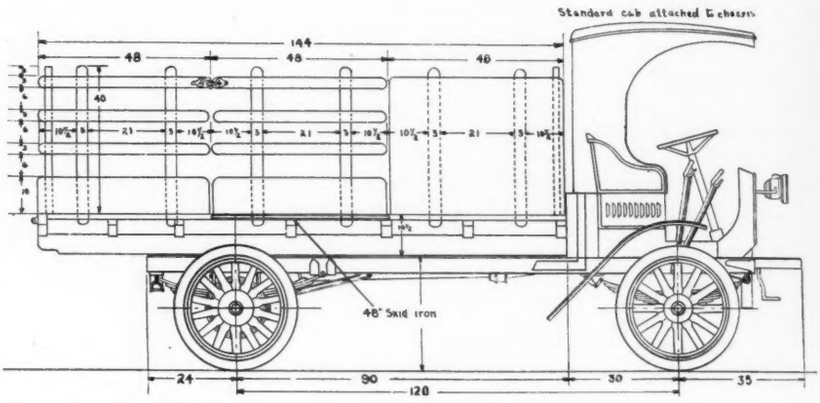
The Crandall Hinge

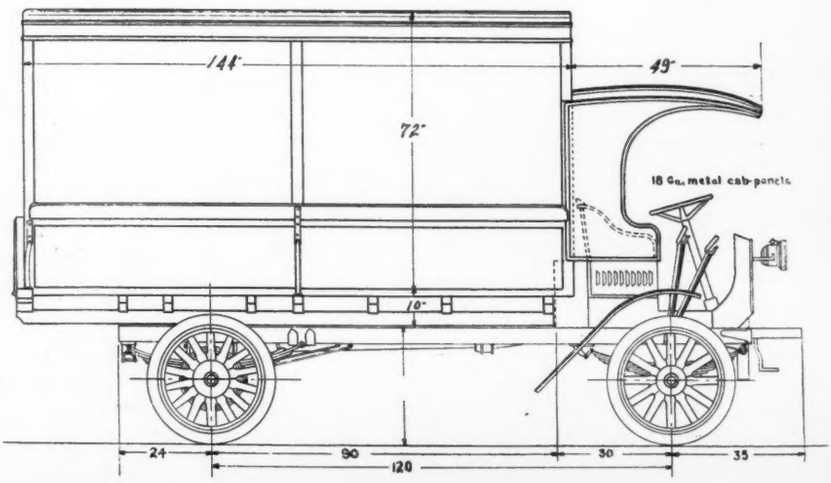
This hinge is designed for use on All-Purpose Farm Bodies and is being used on the Republic 8-in-1 Farm Body, which is described elsewhere in this issue. This hinge is made up of four malleable castings, a right and left cross-member plate and a right and left arm plate. Each hinge weighs approximately 8½ pounds. The construction of this hinge is clearly seen from an illustration of the Republic 8-in-1 Body, while the accompanying line drawings show the hinge in various positions. Further information on this hinge may be obtained from the Bradfield Company, 910 Kresge Building, Detroit, Mich. With a 15-inch arm length, this hinge is designed to carry 700 pounds in an extended position.

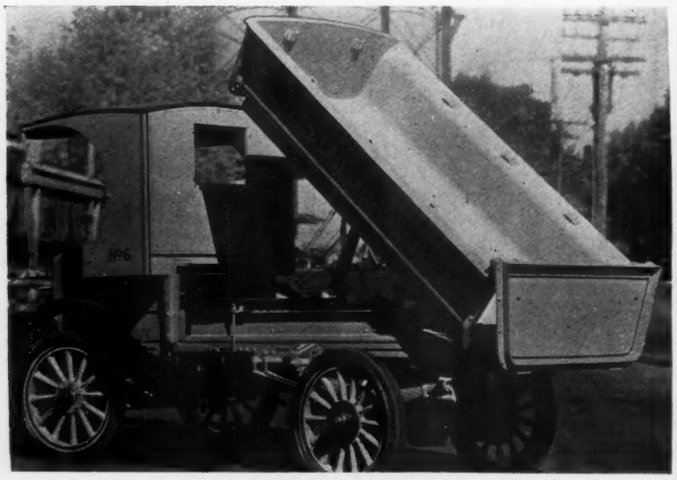
Some of the Standard Bodies Built by the Autocar Company, Ardmore, Pa.

The Autocar Company builds a complete line of standard bodies for its 97 and 120 inch wheelbase models. This company's body designing department is continuously designing new bodies to meet special working conditions. The accompanying illustrations show two of the dump bodies built by this company. The one on the left illustrates the high-lift, power-operated coal chute body. The body and power hoist complete, lists at $650. The illustration on the right shows the Autocar rotary dump understructure, equipped with a stake body. The same platform can be used for any number of bodies. The body can be fitted with removable flare-boards or stakes, or can be used as a platform body. The body illustrated, fitted with power hoist, lists at $650. The line drawings, shown on this page, show some of the new designs developed for the new Autocar 120 inch wheelbase model. The illustrations from top to bottom show a unit construction express body; unit construction rack body and a six-post open body.







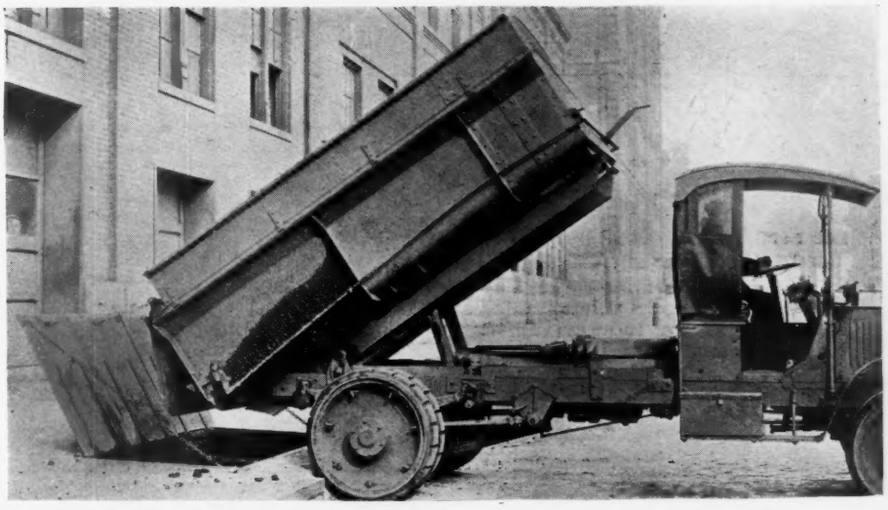


Monarch Eureka, Four-Ton Combination and Dumping Body

Built by the Thomas Wright Company, 7178 Golden Street, Jersey City, N. J. The sides of this body are removable, making a platform body for general hauling. This outfit is also manufactured in 3 and 6 ton sizes. The hoist is operated by the power taken from the engine.

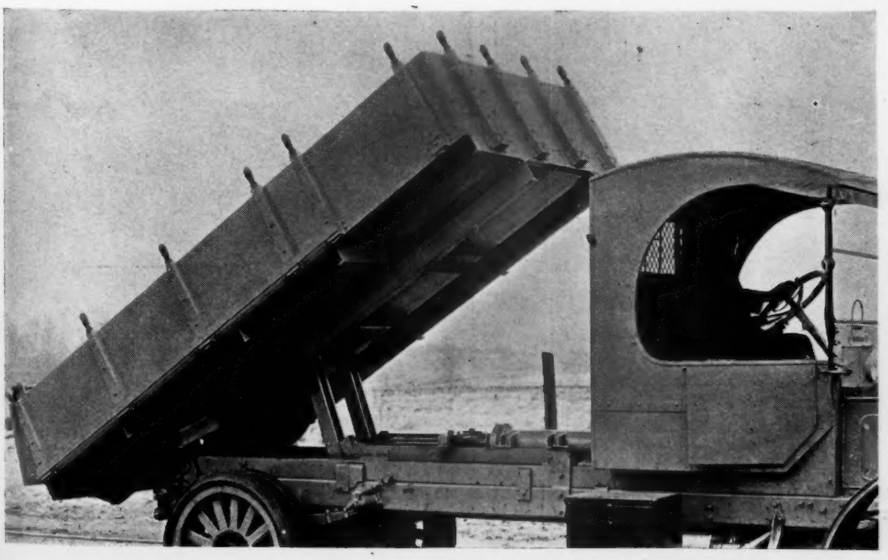
A Body Designed for Hauling Flour in All Kinds of Weather

The above illustration shows a body built especially for the purpose of hauling flour. The body was built by the Menominee Motor Truck Company for the Lake Superior Produce Company. Dimensions of this body are 76 inches wide, 168 inches long and 75 inches high. It is a special stake body with canopy top, fitted with curtains which can be put on during inclement weather.



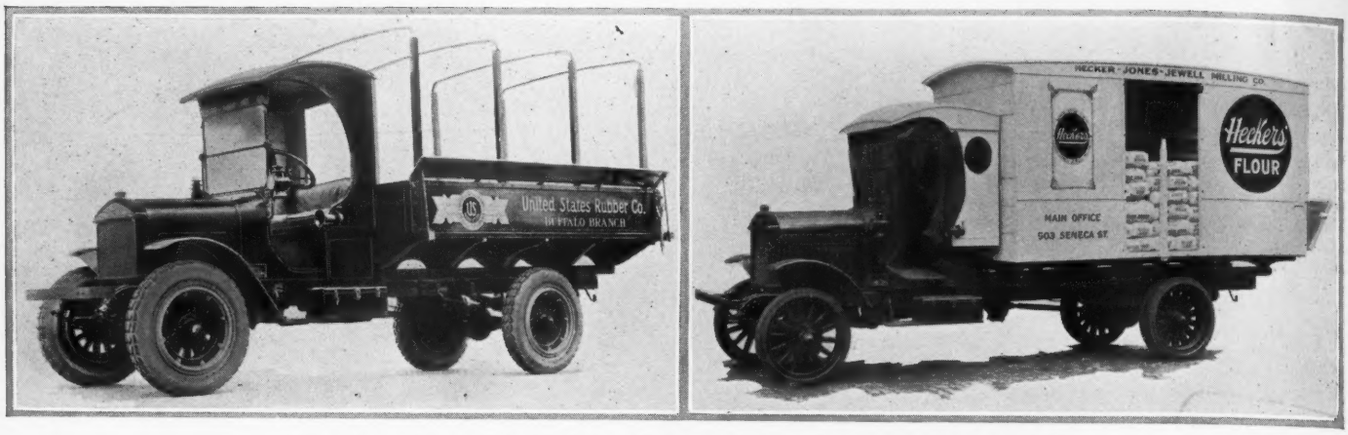
Model HH-2, Steel Dump Body and "Dreadnaught" Horizontal Hydraulic Hoist, Mounted on 6-E Packard Chassis

Built by the Horizontal Hydraulic Hoist Company, Detroit, Mich. As will be noticed from the illustration, the dump body is of exceptional size, while the hydraulic hoist is one of the most powerful built for use on trucks. This body and hoist handle from 8 to 10 tons per load.



Model HH-7, "All-Purpose" Wood Dump Body With Horizontal Hydraulic Hoist, Mounted on Two and a Half Ton Sterling Chassis

Built by the Horizontal Hydraulic Hoist Company, Detroit, Mich. This is a wooden, convertible body which can be converted into a stake body by the removal of the sideboards and substituting stakes.



Two Special Body Jobs, Built by the Stewart Motor Corporation, Buffalo, N. Y.

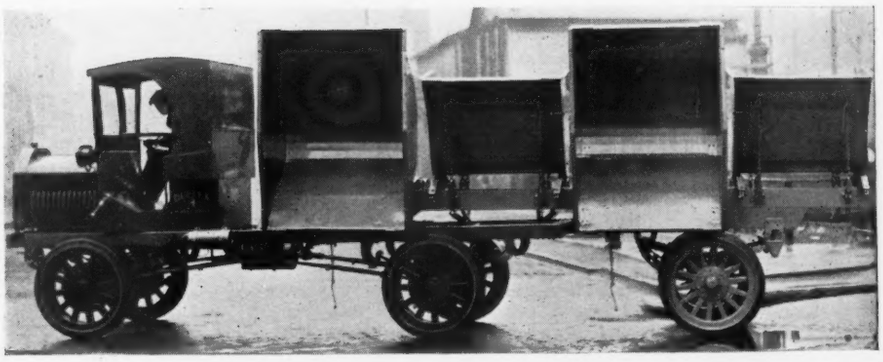
On the left: Stewart Model 9, 1½ ton special body, built for the U. S. Rubber Company. It is a combination express and panel job, which can be covered with a tarpaulin during inclement weather. On the right: A side-entrance panel job, built for the Hecker-Jones-Jewell Milling Company, mounted on a Stewart Model 7, 2 ton chassis

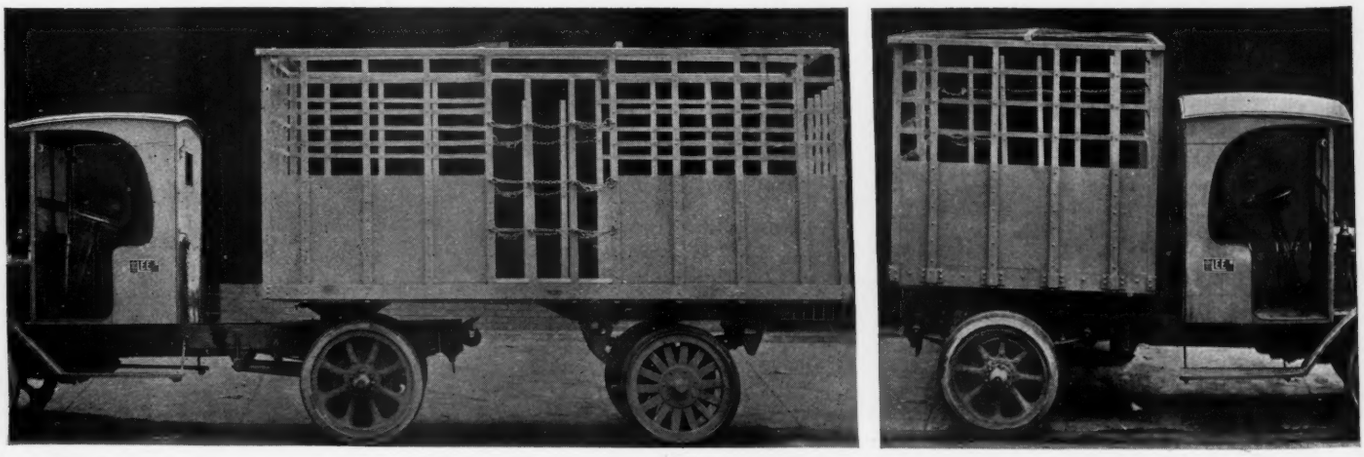
One of the Many Body Jobs Produced by the Winther Motor Truck Company, Kenosha, Wis., During the Past Few Months

The wheels on this chassis are flanged, as this machine runs on a narrow-gauge railway track. Note the absence of the steering column.

Lee Semi-Trailer. Built by the Lee Loader & Body Company, Chicago, Ill.

On which is mounted a four-section, four-yard body. Very useful in road-building work. These sectional bodies can be made in almost any size.





Lee Six-Ton Semi-Trailer

With stake body, 5 feet 5 inches high, 14 feet long, 6 feet 6 inches wide. Built integral with frame of semi-trailer. Pulled by 3½ ton tractor. Note particularly that bed of semi-trailer is level and not slanting.

Field "All-Service" Durable Bodies Will Fit Any Make Truck

The Field Durable Body, built by the Field Mfg. Co., of Owosso, Mich., will fit any make or size of chassis. The universal adjustable feature of the Field Durable Body platform is made possible by a new style subsill attachment (patent applied for) which adjusts the main subsill instantly to any desired position, making it correspond to the fraction of an inch with any chassis frame.

With a set of Field Interchangeable "All Service" Truck Body Units any style of body required may be quickly assembled without changing the platform. To take care of the frequent changing from one type of body to another special attention has been paid to securing great rigidity of the various parts, as no ordinary type of construction can permanently withstand the strain of repeated changes plus the hard usage to which a truck body is usually subjected.

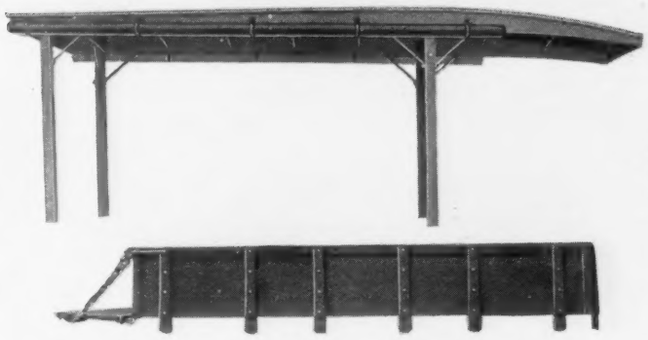
The bolsters, stake pockets, guard angles and floor are bolted and riveted solidly into one piece, so that it is impossible for them to loosen, even under the most severe usage.

The floor is of heavy planking, matched and bolted throughout. The scuff strips extend under guard angles at each end and are riveted down. They cannot come loose or curl up at the ends even with removal of every screw.

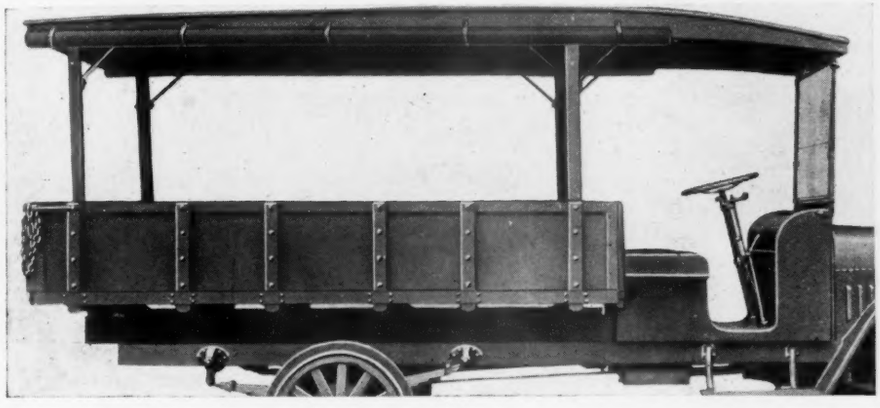
The guard angles are bolted through the floor into stake pockets along the top edge, and are riveted into the stake pockets around the outer edge. The interchangeable units themselves are heavily ironed.

Special attention is directed to the grain extension sides which are furnished to mount onto the regular express body. A special grain tail gate is also furnished. This body is also provided with a new style grain gate, (patent applied for) which locks into the opening in tail gate and may be quickly removed for dumping.

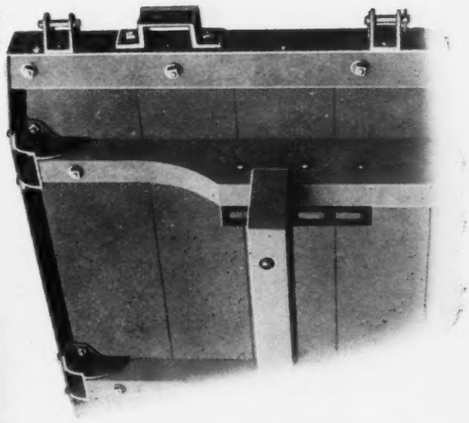
The stock body shown herewith is supplied with a special stock gate. (Patent applied for.) This device permits the quick and easy loading of small stock. The gate may be easily shut as often and quickly as necessary to prevent the escape of the stock. By simply removing two staples, the top bar may be quickly taken out, which permits handling the largest animal.



Showing the Top and Sides Removed From the Platform.



The Field "All-Service" Body With Canopy Top and Sides in Place



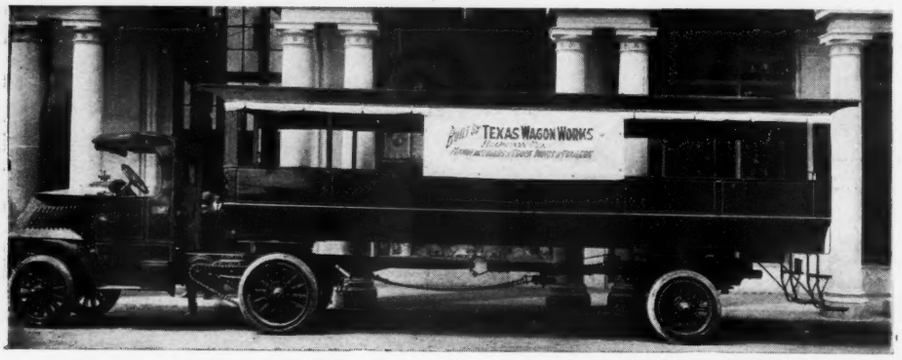
Underneath View of the Field Durable Body Platform

This illustration shows how the main subsills can be adjusted to frame width

The A B C Cab for Ford One-Ton Trucks

This cab, built by the Ames Body Corp., of Owensboro, Ky., is designed especially for the Ford 1-ton truck. Its distinctive features are low cost combined with sturdy construction and good appearance. It is an all-season proposition, having a special removable foredoor on driver's side for foot protection, with large door open; removable back panel section with small glazed door, which can be latched open as desired. Pockets are arranged on both sides of the driver's seat, also special compartments under the driver's seat. Doors and side panel are identical in construction, dimension and finish. The cab is painted and striped inside and out, so that side panel with doors open or closed has the same appearance. The outside measurements of this cab are 44 in. deep by 45½ in. wide. The glass in the doors and side panels is interchangeable—complete equipment includes windshield and filler board combined; floor boards; full width cushion and back covered with best grade imitation leather; fore door; side pockets and high-grade hardware. The cab is painted a rich gray, black striped. This cab is shipped knocked down, crate dimensions being 27 x 56 x 56 in. This company is also engaged in building regular Ford express and stake bodies.

The A B C Ford Truck Cab



An Especially Designed Tracking Trailer With Bus Body

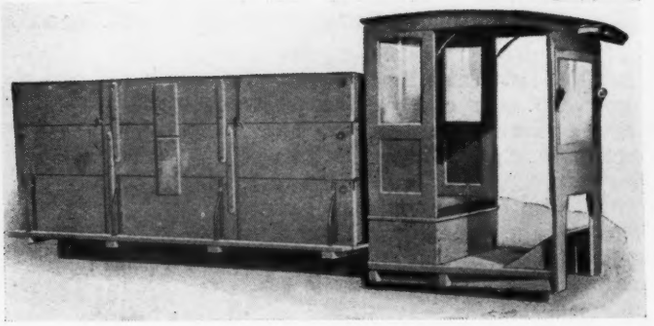
This outfit was built by the Texas Wagon Works, Houston, Texas. The trailer tracks with the truck, making it possible to handle a long body with the same ease as the truck alone. This trailer is especially adapted for a long body as shown, or for carrying poles. It measures 37 feet over all. The bus body is 25 feet long and 8 feet wide on the floor. It has a steel frame and is built in 2, 3, and 5 ton sizes.

Special Body Designed for Moving Furniture and Household Goods

This body was built by the Federal Motor Truck Company, Detroit, Mich. The body is exceptionally high. Note the space which is made use of above the cab.

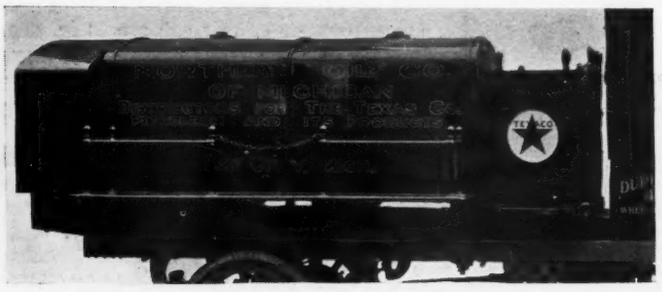
Special Body for Handling Explosives. Built by the General Motors Truck Company, Pontiac, Mich.

The cab is entirely of steel; the outside of the body is steel with a steel floor between the chassis and the frame-sills. This extends completely across the chassis and prevents the passage of any heat or fire. The muffler is hung exceptionally low, to keep it as far away as possible from the powder. Bumpers both front and rear are rope-covered to prevent sparks in case there is a collision. The inside of the body is lined with wood, with all nails covered.



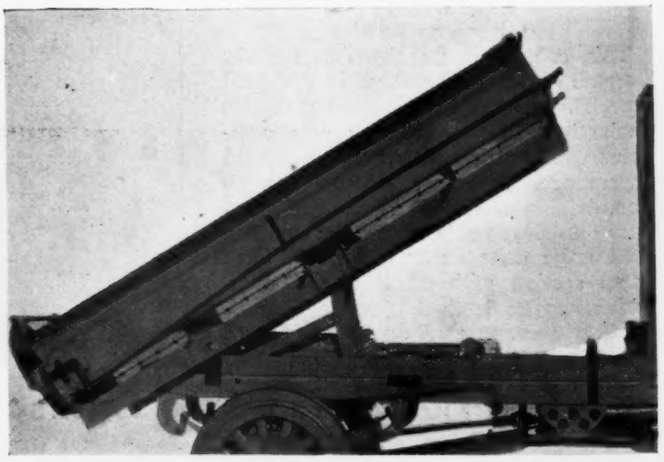
The Abingdon Combination Express, Grain and Stock Body

Built by the Abingdon Motor Truck Body Company, branch of the Abingdon Wagon Company, Abingdon, Ill. The illustration shows the body set up for carrying grain. The loading space is 8 feet by 52 inches, the lower panel measures 14 inches, top panel 12 inches, and tip-top panel, 10 inches; stock-rack is also furnished. Illustration shows the Abingdon cab without the fore-doors. The cab seat is 36½ inches long and 17 inches deep; length of the cab is 44 inches over all; width 46 inches.



Duplex Oil and Dump Bodies

The illustration above shows a special oil-carrying body, built by the Duplex Truck Company, Lansing, Mich. This particular body is designed for supplying gasoline and oil to the retail trade. The illustration on the right shows the Duplex Dump Body.



Flexible Top, Under-Structure and Tail-Gate Features of Lowry Body

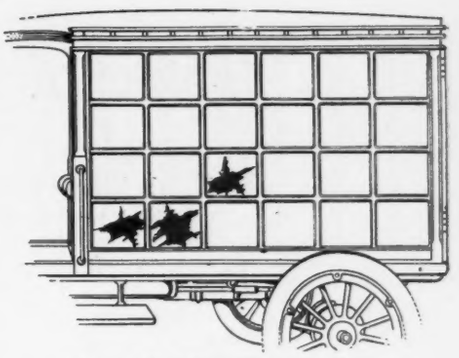
The Lowry Red Star patented truck body, built by the Lowry Top and Body Co., of Gaul and Adams Sts., Philadelphia, contains a number of advanced ideas in body designs. The body and various parts are being manufactured under the Red Star patents. These patents and patent applications apply to the roof, the structural members, the understructure, the tail gate and the metallizing of the runners and sills with angle irons. One of the distinctive features of the Lowry body is the patented non-leakable roof.

The roof is of latticed construction without any nails or screws in it, which allows for the vibration to exhaust itself in the roof. It also allows for the expansion and contraction of the roof due to wearing of the chassis.

The slats are screwed in place, to the side rails only, and the slats are then covered with a piece of shoddy felt one-eighth of an inch thick. This keeps the slats or strips from chafing the heavy dust cover which is then stretched over the felt. As there are no nails or screw holes in latter, roof leakage is eliminated.

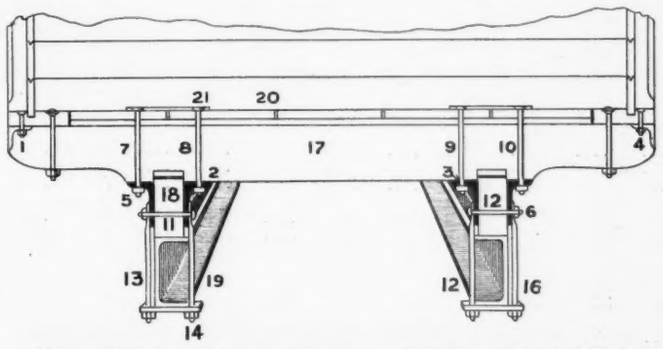
Lowry Patented Tail-Gate

This tail-gate eliminates the use of a long chain. The tail-gate can be set at any angle or in any position within a radius of a half-circle.



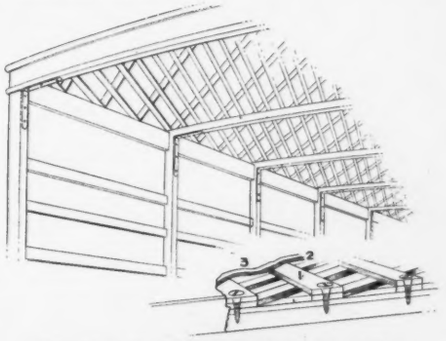
Lowry Red Star Patented Panel Truck Body

The feature of the Lowry body is that the sides are made up in panel form which permits replacement of only the panels which are damaged in case of an accident and makes it unnecessary to rebuild and repaint the entire side in order to make the proper repair.



Under-Structure Design of the Lowry Red Star Patented Body

The feature of this construction is that should the body become loosened in any way, it can be easily tightened up or adjusted, as all the bolt heads are outside and within easy access. The reference numbers, in the illustration, indicate as follows: Figures 1, 2, 3, and 4, angle irons running full length of the body; 5 and 6, angle irons width of cross-bar; 7, 8, 9, and 10, bolts running through floor plates, floor filler strip, cross-bar and angle iron; 11 and 12, bolts running through the runners and vertical legs of angle irons; 13, 14, 15, and 16, clip-strap bolts which hold the body to the truck chassis; 17, cross-bar; 18, runner; 19, chassis frame; 20, filler and floor; 21, floor plate on top of floor.



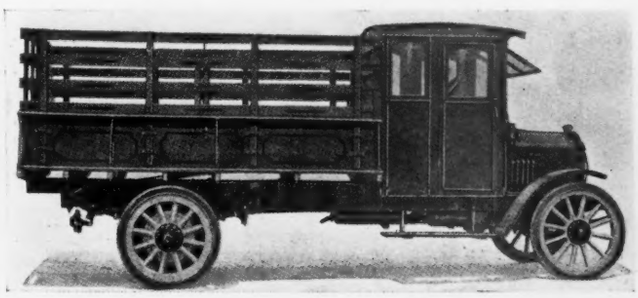
Showing the Roof Construction of the Lowry Body

The slats are screwed to the side-rails only, which allows them to weave and vibrate freely against a heavy felt cover, which protects the heavy No. 6 duck cover itself. Figure 1 indicates the lattice roof slats; 2, boot felt placed over roof slats; 3, heavy canvas cover water-proofed with pure linseed oil and lamp-black.

The construction of the understructure is clearly seen in one of the accompanying illustrations.

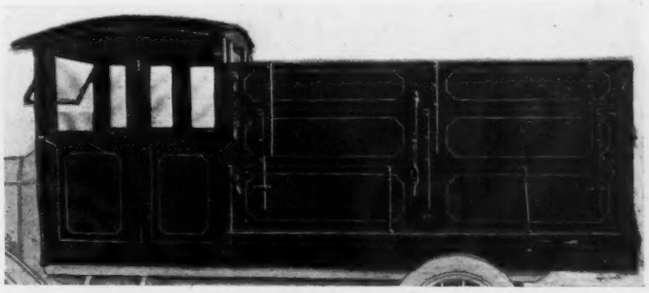
The Lowry patented tail-gate does away with several yards of chain. The angle iron, at the top of the tail-gate, runs the full length across the top of the tail-gate. This heavy angle iron will not allow the tail-gate to sag in the middle or break down, on account of the great strength of the upper horizontal leg. The vertical leg is substantially bolted to the heavy oak boards, so as to prevent any possibility of the vertical leg of the angle iron buckling. The tail-gate is held in a closed position by a lock and link with groove and hole in the ends of the angle iron for supporting the gate.

This concern is ready to license body manufacturers under these patents.



The Omaha "3-in-1" Standardized Adjustable Farm Truck Body. Built by the Omaha Body Company, Omaha, Nebraska

Showing body set up for hauling cattle, sheep, hogs, etc An extra panel goes with the body, which is used when hauling grain or vegetables, and which makes the body 26 inches deep over all. The body is made in various lengths and widths to suit the capacity of the truck to which it is applied. The body can be had with or without cab.



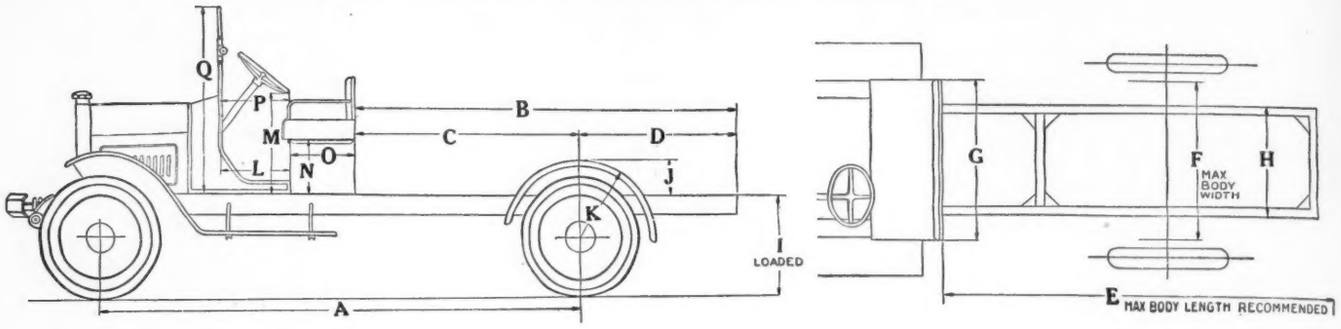
The Matthews Combination Grain, Stock, and Cattle Body

This illustration shows the Matthews Combination Body made by the Matthews Carriage & Auto Company, Incorporated, 212 East Third Street, Des Moines, Iowa, as adopted for hauling grain. The panels can be removed as desired for different purposes and can also be fitted with stakes or racks. This body is made in various sizes for all makes of trucks.

Table of Body Building Dimensions

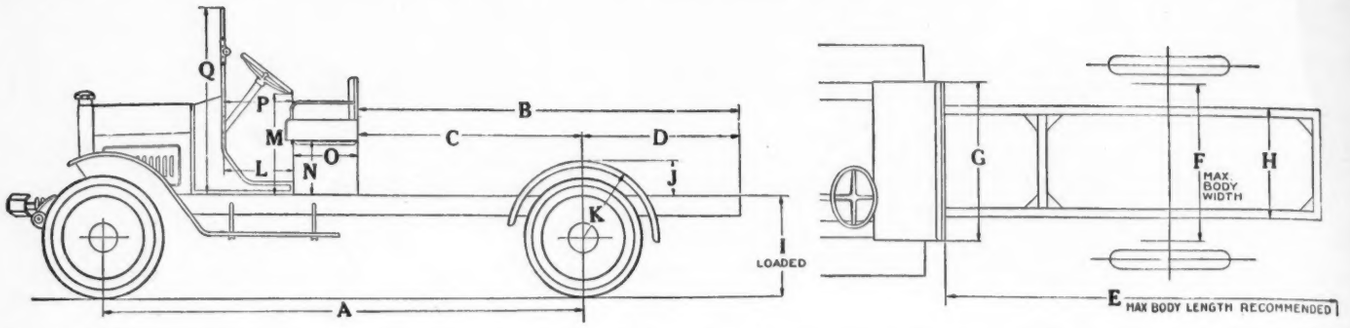
(To be Concluded in our Next Issue)

Note: Where figures are omitted under columns J, K and Q, it denotes that rear fenders and windshield are not furnished with chassis



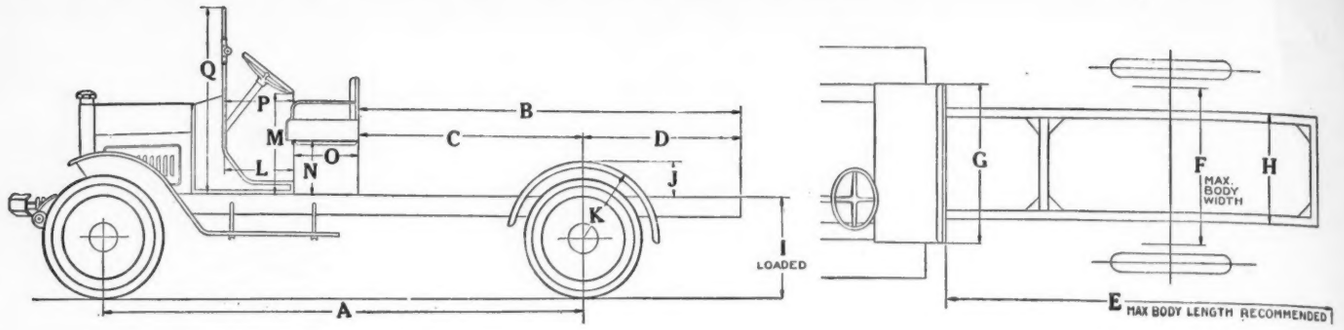
Model Name or No.	Cap. in Tons	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Max. Body Weight Recom'd
Abbott-Downing Truck & Body Co., Concord, N. H.																			
Concord A	1½	140	110¼	69	41¼	126	....	....	....	32½	....	....	....	....	....	21	....	....	....
Concord B	2½	150	124⅝	79⅝	45	138	....	....	....	33⅞	....	....	....	....	....	21	....	....	....
Concord BX	2½	170	157⅝	99⅝	58	180	....	....	....	33⅞	....	....	....	....	....	21	....	....	....
Acme Motor Truck Co., Cadillac, Michigan.																			
B	1	130	107⅜	61⅜	46	120	48	44	34	26¾	7¼	17	....	....	14	19	....	....	....
A	2	148	132½	75½	57	144	47	44	34	30	6	18	....	....	15⅛	19	....	....	....
C	3½	168	147½	92½	55	162	51¼	49	36	35	5	20	....	....	10½	19	....	....	....
E	5	180	157	97	60	174	53	49	37	35½	4½	20	....	....	10½	19	....	....	....
All-American Truck Co., Chicago, Ill.																			
A	1	130	104	64	40	114	45	36	31	29	8	21½	22	26½	14	18	20½	....	600
American Commercial Car Co., Detroit, Mich.																			
Wolverine "C"	1½	140	120	76	44	135	....	51	34½	....	....	....	18	30	17	20	20¾	54	1200
	...	...	...	....	....	.....	48	....	....	30	10	23	....	....	....	....	....	....	....
	...	...	...	....	....	.....	46	....	....	33	16	26	....	....	....	....	....	....	....
The American Motor Truck Company, Newark, Ohio.																			
Series A	2½	156	145½	98	47½	168	68	54½	32	30	....	....	26	34	17½	20½	26	56	....
O. Armleder Co., Cincinnati, Ohio.																			
KW	3½	186	148	118¾	29¼	174	56	48	36	35½	6½	25	24¼	31½	16¾	20	26½	60	....
KW	3½	156	118	88¾	29¼	144	56	48	36	35½	6½	25	24¼	31½	16¾	20	26½	60	....
HW	2	166	139¾	91¾	48	156	51	48	32	31	6½	25	25¾	30	16¾	20	24	60	....
HW	2	148	119¾	73¾	46	132	51	48	32	31	6½	25	25¾	30	16¾	20	24	60	....
Atterbury Motor Car Co., Buffalo, N. Y.																			
7R	1½	140½	115⅜	67⅜	48	108	54	45½	34	32	....	....	24	33	18	19	24½	....	1050
7C	2	153½	133⅜	80⅜	71	132	60	45½	34	33	....	....	24	33	18	19	24½	....	1200
7D	3½	167½	145⅜	89⅜	56	144	72	45½	37½	36 5/16	....	....	24	33	18	19	24½	....	1600
8E	5	167½	157⅞	80⅞	77	192	72	54⅞	37½	38 5/16	....	....	24	33	18	21	24½	....	1800
The Autocar Company, Ardmore, Pa.																			
XXI-F	1½-2	97	91	67	24	120	60	51	34	32	10	24	25	31	17½	19	25	....	....
XXI-G	2	120	114	90	24	144	66	51	34	32	10	24	25	31	17½	19	25	....	....
Available Truck Co., Chicago, Ill.																			
H-2	2	132	120	69¾	50¼	120	72	32	32	34	....	....	25½	32	15¼	21	26	56	1200
H-2	2	148	144	85¾	58¼	144	72	32	32	34	....	....	25½	32	15¼	21	26	56	1200
H-2	2	164	168	101¾	66¼	168	72	32	32	34	....	....	25½	32	15¼	21	26	56	1200
H-3	3½	156	144	90⅝	53⅜	144	78	36	36	36	....	....	25½	32	15¼	21	27	56	1600
H-3	3½	172	168	106⅝	61⅜	168	78	36	36	36	....	....	25½	32	15¼	21	27	56	1600
Bessemer Motor Truck Co., Grove City, Pa.																			
G	1	124	98¼	58½	39¾	112	50	35½	34	29	6	....	....	....	17	19	23¾	....	....
	1½	144	116⅓	76⅓	40	132	50	35½	34	28½	7½	....	....	....	17	19	23¾	....	....
	2½	158	144⅝	94⅝	50	160	56	35½	34	30	6½	....	....	....	17	19	24¾	....	....
	4	175	157	108¼	48¾	200	58	39	38½	34	4¾	....	....	....	17	19	23¾	....	....
Bethlehem Motors Corporation, East Allentown, Pa.																			
D	1½	136	120	66	54	132	56	50	34	28	....	27	18	28	15	17½	18	27	800
E	2½	144	138	74	64	150	56	50	34	29	....	27	18	28	15	17½	18	27	1000
F	3½	162	156	87	69	168	56	50	34	30	....	27	18	28	15	17½	18	29	1200
Brinton Motor Truck Co., Philadelphia, Pa.																			
Brinton	2½	150	135½	87	48½	144	45	50	33	38	....	....	23½	28	17⅛	18	25½	....	....
Briscoe Motor Corp., Jackson, Mich.																			
T-34	1	121	98½	56¼	42¼	.....	48	51½	34	29	....	....	21½	27½	13	15¼	20¼	*	....
*No windshield furnished with truck—seat only. Windshield furnished with cab.																			
Brockway Motor Truck Co., Cortland, N. Y.																			
K3	2	148	136½	92	44½	156	72	46	34	34	....	....	....	....	18½	20	23	....	....
R	3½	164	154½	103	51½	180	84	46	36	38	....	....	....	....	18½	20	23	....	....
J2	1½	140	112	71	41	126	72	46	33¾	33	....	....	....	....	15¾	20	23	....	....
S	1½	140	118	71	77	132	66	46	32	29½	....	....	....	....	15	20	26	....	....
T	5	174	153	104½	48½	180	86	46	26	37¾	....	....	....	....	18½	20	25¾	....	....
Chicago Motor Truck, Inc., Chicago, Ill.																			
C 1	1	132	111¼	65¼	46	120	48	48	32	33	7	20	26	28¾	14	18½	26	....	900
C 1½	1½	144	125¾	77¼	48½	132	48	48	32	33	7	20	26	28¾	14	18½	26	....	1050
C 2	2	156	137¾	86½	48½	144	48	48	32	33	7	20	26	28¾	14	18½	26	....	1200
C 2½	2½	156	137¾	86½	48½	144	48	48	32	33	7	20	26	28¾	14	18½	26	....	1350
The Clyde Cars Co., Clyde, Ohio.																			
32	1	144	117½	64	53½	.....	55	....	....	31	....	....	25¼	31½	16½	21	22¼	55½	1000
42	1½	146	117½	66	51½	.....	55	....	....	32	....	....	25¼	31½	16½	21	22½	55½	1200
65	2	150	124	74	50	.....	55	....	....	33	....	....	25¼	33	16½	21	23½	55½	1500
65-E	2	163	132	82	50	.....	55	....	....	33	....	....	25¼	33	16½	21	23½	55½	1500
90	3½	170	143	89	54	.....	55	....	....	37	....	....	25¼	31½	16½	21	24	55½	2000
120-B	5	176	131	89	43	.....	55	....	....	40	....	....	25¼	30½	16½	21	23½	55½	2000
The Collier Motor Truck Co., Bellevue, Ohio.																			
16	¾	120	90	55	35	102	44	45	34	33	8	20	22½	27	16	17	24	55	....
17	1¼	130	98	60	38	108	44	45	35	32	10½	22½	22½	31	17⅞	19	23	55	....
18	1¾	144	128	107	21	120	44	50	32	32	10½	22½	22½	31	17⅞	19	23	55	....

Model Name or No.	Cap. in Tons	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Max. Body Weight Recom'd
Columbia Motor Truck & Trailer Co., Pontiac, Mich.																			
E	2	144	132	89	43	144	50	52	32½	31	8	21	21	31	15	18	24	....	....
F	1	126	108	69	39	120	48	52	32½	29½	7½	20	21	31	15	18	24	....	....
Comet Automobile Co., Decatur, Ill.																			
MT-1	1½	130	101	58	43	111	50	37¼	36	31	11½	....	26⅜	25	14	17½	25	61	....
Commerce Motor Car Co., Detroit, Mich.																			
E	1	126	92	53	39	120	46	51½	34	28	10	24	25	28	13¾	15¾	27	51	750
EP	1½	134	99	61	38	120	46	51½	34	30	10	24	25	28	13¾	15¾	27	51	1000
Commercial Truck Co. of America, Philadelphia, Pa.																			
½-ton	½	89¼	70¼	46¾	23½	72	54	....	41	32¾	9	23¾	24½	28	16½	21	26⅛	24	600
1-ton	1	101	98½	73	25½	102	53	....	41	32½	9	23½	24½	28	16½	21	26¾	24	900
2-ton	2	116	132⅝	94⅝	38	138	53	57	42	35	7	24	24½	27½	16½	21⅞	26½	24	1200
3½-ton	3½	122	150⅛	111⅛	39	153	....	57	33½	38⅛	3	23⅛	24½	30	16¾	21⅞	23½	24	1600
5-ton	5	132	168¾	126⅞	41½	169	....	57	33½	38⅝	3	23⅝	24½	30	16¾	21⅞	23½	24	1800
Dart Truck & Tractor Corporation, Waterloo, Iowa.																			
E	1	130	102	65	37	108	47	43	34	31	7	20	22½	31	16	18	23	....	....
CC4	2	150	124	81	43	132	47	43	34	33	7	22	26½	29½	16	18	27	....	....
L	3½	160	144	84	60	144	51	50½	38	34	7	23	25½	31	16	19	24½	....	....
Day-Elder Motors Corp., Newark, N. J.																			
J	¾	108	70	38	32	....	52	51	34¼	33	....	....	....	....	....	20⅛	....	....	....
A	1	128	103	64	39	...	51½	51	35	34	....	....	....	....	....	20⅛	....	....	....
B	1½	144	120	80¼	39¾	....	51½	51	35	34	....	....	....	....	....	20⅛	....	....	....
C	2	150	127¼	81¼	46	....	50½	51	35	36	....	....	....	....	....	20⅛	....	....	....
C	2	165	151¼	96¼	55	....	50½	51	35	36	....	....	....	....	....	20⅛	....	....	....
D	2	144	118	78..	39¾	....	50½	51	35	35	....	....	....	....	....	20⅛	....	....	....
F	2½	150	121	75	46	....	48½	51	35	36⅝	....	....	....	....	....	20⅛	....	....	....
F	2½	165	145	90	55	....	48½	51	35	36⅝	....	....	....	....	....	20⅛	....	....	....
	5	150	125	78¼	39¾	....	50½	51	37	40	....	....	....	....	....	20¼	....	....	....
	5	170	155	98	57	....	55	57	37	40	....	....	....	....	....	20¼	....	....	....
Dearborn Truck Co., Chicago, Ill.																			
A	1	126	101½	54¼	47¼	108	50	....	32	26	5	....	....	28	....	....	26½	25	....
B	2	135	109	57	52	115	48	....	32	28	5½	....	....	30	....	....	20	29	....
F	1½	124	97⅛	54¼	42⅝	108	48	48	34	27½	6	....	24½	29½	16	18½	25½	27	....
Seats not furnished on A & B models.																			
Denby Motor Truck Co., Detroit, Mich.																			
12	1	124	94⅞	59⅜	35½	120	46	47½	34	27	15	25	22	27¼	14¼	19¼	24 1/16	56 3/16	900
13	2	144	129	78⅛	51	156	60	34	34	31⅜	12	25⅜	22	28½	14¾	19	25	56 1/16	1200
25	3	150	142	82⅝	59⅜	162	60	34	34	31	12	25	24	28½	14¾	19	25	56 1/16	1500
27	3½	170	170	87	83	216	72	42½	34	34½	10	26½	29½	26¾	15	20	31½	52⅜	1600
210	5	170	170	87	83	216	72	42½	34	36½	10	26½	29½	26⅜	15	20	31½	52⅜	1800
Diamond T Motor Car Co., Chicago, Ill.																			
J 5	1	132	97¼	58¾	39	....	....	....	....	31	....	....	....	29½	14	20	23¾	....	....
J 5	1	126	97¼	52¼	45	....	....	....	....	31	....	....	....	30	14	20	23¾	....	....
J 4	1½	127	...	53¼	....	....	....	....	....	31½	....	....	....	30	14	20	23¾	....	....
J 4	1½	154	128¼	80¼	48	....	....	....	....	31½	....	....	....	30	14	20	23¾	....	....
J 4	1½	160	128¼	86¼	42	....	....	....	....	31½	....	....	....	30	14	20	23¾	....	....
J 3	2	154	129½	81½	48	....	....	....	....	32¾	....	....	....	31	14	20	23¾	....	....
J 3	2	160	129½	87½	42	....	....	....	....	32¾	....	....	....	31	14	20	23¾	....	....
L B	3½	170	154½	102½	52	....	....	....	....	36	....	....	....	30	15	20	24¾	....	....
L B	3½	180	154½	102½	52	....	....	....	....	36	....	....	....	30	15	20	24¾	....	....
R	5	170	154½	102½	52	....	....	....	....	38½	....	....	....	30	15	20	24¾	....	....
R	5	180	154½	102½	52	....	....	....	....	38½	....	....	....	30	15	20	24¾	....	....
T	...	144	123¼	72¼	51	....	....	....	....	38¼	....	....	....	30	14	20	23¾	....	....
Duplex Truck Co., Lansing, Mich.																			
E	3½	130	124½	82⅝	45⅜	144	72	45	39⅜	39½	....	....	25	36½	17	16	25	56¾	1500
Famous Trucks, Inc., St. Joseph, Mich.																			
B 10	1	120	95	51	44	108	46	45	34	30	10	28	24	30	16	20	27	30	1000
B 12	1½	138	118	68	50	144	46	45	34	31	10	28	24	30	16	20	27	30	1250
Federal Motor Trucks, Detroit, Mich.																			
S	1	132	98	66 5/16	31 1/16	....	....	42	34	29½	....	....	23	....	16½	19	....	....	....
S	1	132	98	66 5/16	31 1/16	....	....	42	34	29½	....	....	23	....	16½	19	....	....	....
S	1	132	112	66 5/16	45 1/16	....	....	42	34	29½	....	....	23	....	16½	19	....	....	....
T	1½	...	120	78 5/16	41 1/16	....	....	42	34	31	....	....	23	....	16½	19	....	....	....
U	2	120	88	54 5/16	33 1/16	....	....	42	34	32	....	....	23	....	16½	19	....	....	....
U	2	144	112	89 5/16	32 1/16	....	....	42	34	32	....	....	23	....	16½	19	....	....	....
U	2	156	136	90 5/16	45 1/16	....	....	42	34	32	....	....	23	....	16½	19	....	....	....
U	2	168	160	102 1/16	57 1/16	....	....	42	34	32	....	....	23	....	16½	19	....	....	....
Federal Motor Trucks, Detroit, Mich.																			
W	3½	156	132	88	44	....	....	50	38	35	....	....	23	....	16½	19	....	....	....
W	3½	156	156	88	68	....	....	50	38	35	....	....	23	....	16½	19	....	....	....
W	3½	180	192	92	80	....	....	50	38	35	....	....	23	....	16½	19	....	....	....
X	5	156	152	88	44	....	....	50	38	35	....	....	23	....	16½	19	....	....	....
X	5	156	152	88	68	....	....	50	38	35	....	....	23	....	16½	19	....	....	....
X	5	180	192	92	80	....	....	50	38	35	....	....	23	....	16½	19	....	....	....
Four Wheel Drive Auto Co., Clintonville, Wis.																			
B	3	124	136	97	39	132	60	43¾	36	37	....	....	20½	29	26½	34	20½	....	....
Fulton Motor Truck Company, Farmingdale, L. I., N. Y.																			
C	3-4	137	104	73	31	144	....	51	34	32¾	....	....	17¼	28¼	....	16	14½	....	1000
Gabriel Motor Truck Co., Cleveland, Ohio.																			
E	2	156	124⅞	85¾	39½	138	66	50	33¼	30	....	....	22¾	27½	16	19	22¾	53	1000
The Garford Motor Truck Company, Lima, Ohio.																			
75-C	1	128	98	58	40	108	46	46	34	32½	....	16⅛	26	30¾	....	17	26	....	900
66-B	1½	144	114	74	40	120	46	52	34	33	....	17⅛	26	32½	....	17	26	....	1050
70-B	2	144	121	74	47	120	46	52	34	33	....	17⅛	26	32¼	....	17	26	....	1200
77-C	3½	128	150	96	54	168	72	56	32	36	....	19¼	40	31½	....	21¼	41¼	....	1600
68	5	128	150	96	54	168	72	56	32	36	....	19¼	40	31½	....	21¼	41¼	....	1800
Gary Motor Truck Co., Gary, Indiana.																			
FT	1	144	120	75	45	....	....	44	34	29	....	....	23	30	16	18	23	28	900
GT	1½	144	120	75	45	....	....	44	34	30½	....	....	23	30	16	18	23	28	1100
HT	2	144	120	75	45	....	....	44	34	30½	....	....	23	30	16	18	23	28	1200
KT	3½	162	148	86	62	....	....	56	36¾	36	....	....	23	31	17	20	23	30	1500
M	5	170	168	87	81	....	....	56	39	38	....	....	25	31	17	20	25	30	1650
General Motors Truck Co., Pontiac, Mich.																			
16	¾	132	109	77	32	....	46¾	36½	34	27	12½	22	26	25¾	15	15	26	....	....
21	1	136	108	64	44	....	49	....	33	28½	11	21½	25	32⅛	18⅛	20	25	....	900
31-A	1½	130	101	58	43	....	49	....	33	30	....	22	25	32½	18⅛	20	25	....	1050
31-B	1½	144	125	72	53	....	49	....	33	30	....	22	25	32½	18⅛	20	25	....	1050
41-A	2	144	125⅜	71⅜	54	....	45	....	33	31½	11	23½	25	32½	18⅛	20	25	....	1250
41-B	2	158	149⅜	85⅜	64	....	45	....	33	31½	11	23½	25	32½	18⅛	20	25	....	1250
71-A	3½	163	144	89½	54½	....	51¾	....	38	35	8	26	25	32⅞	18⅛	20	25	....	1600
71-B	3½	187	192	113½	78½	....	51¾	....	38	35	8	26	25	32⅞	18⅛	20	25	....	1600
101-A	5	163	144	89½	54½	....	51¾	....	38	36	7	26	25	31⅞	18⅛	20	25	....	1800
101-B	5	187	192	113½	78½	....	51¾	....	38	36	7	26	25	31⅞	18⅛	20	25	....	1800
Gersix Manufacturing Co., 2319 5th Ave., Seattle, Wash.																			
K	2½	150	131	78	53	144	46	43	34	33	9	24	24	28	16	20	23	58	....
M	1½	142	114	72	42	126	44	43	32	34	8	24	24	28	16	20	23	58	....



Model Name or No.	Cap. in Tons	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Max. Body Weight Recom'd
Gramm-Bernstein Motor Truck Co., Lima, Ohio.																			
	1	124	102	63⅜	38¼	....	51⅜	44½	36	31¼	....	....	....	....	16	19⅛	....	....	....
	1	130	118	69¾	48¼	....	51⅜	44½	36	31¼	....	....	....	....	16	19⅞	....	....	....
	1½	130	114	69¾	44¼	....	55⅛	44½	36	32½	....	....	....	....	16	19⅛	....	....	....
	1½	148	132	87¾	44¼	....	55⅛	44½	36	32½	....	....	....	....	16	19⅛	....	....	....
	2	146	120	85¾	34¼	....	53½	44½	36	30¾	....	....	....	....	16	19⅛	....	....	....
	2½	156	136	89	47	....	50¼	50½	36	32½	....	....	....	....	13¼	21	....	....	....
	2½	168	168	101	67	....	50¼	50⅛	36	32½	....	....	....	....	13¼	21	....	....	....
	3½	158	144	91	53	....	54½	50⅛	36	36	....	....	....	....	13¼	21	....	....	....
	3½	176	162	109	53	....	54½	50⅛	36	36	....	....	....	....	13¼	21	....	....	....
	5	168	162	99	63	....	61¼	55⅞	42	37	....	....	....	....	13¼	21	....	....	....
	6	168	162	99	63	....	60¼	55¾	42	37	....	....	....	....	13¼	21	....	....	....
Grant Motor Car Corporation, Cleveland, Ohio.																			
12	¾	115	84	54 13/16	29 5/16	....	46⅛	36¼	35	....	11½	....	....	25⅝	12	18¼	18¼	....	....
10, 11, 15	1½	124	107	66	41	....	47	46½	....	....	10½	....	....	28⅝	14	18	16	....	....
16	2	140	134¼	82	52¼	....	47	44	35⅛	15½	10½	....	....	....	14	18	16	....	....
Harvey Motor Truck Co., Harvey, Ill.																			
W E A	1½	128	120	74	46	132	52	40	32	31	....	....	22	31	16	18	22	54	1050
W F A	2½	150	126½	80½	46	138	48	51	32	32	....	....	24	29	17½	18	26½	54	1350
W H A	3½	160	144	87	57	156	54	51	35	35	....	....	24	31	17½	18	23	54	1600
W K A	5	160	144	87	57	156	58	51	35	35	....	....	24	31	17½	18	23	54	1800
Hebb Motor Co., Lincoln, Neb.																			
Lincoln	1½	135	109	61	48	.....	....	42	34	32	....	....	25½	31	17	22	27½	....	....
Washington	2½	156	151¾	84	67¾	.....	....	42	34	36	....	....	25½	31	17	22	27½	....	....
Hoover Wagon Co., York, Pa.																			
15-B	¾	120	80	72	28	108	48	48	35½	27	12	25	22	26	14	20	23	53	750
20-A	1½	132	104	83	41	132	48	48	33	29	....	....	22	26	14	20	23	....	1000
Huffman Bros. Motor Co., Elkhart, Ind.																			
"B" & "C"	2	140	130	78	52	130	62	50	32	28½	....	....	27	27½	15½	17	23½	30	1000
Independent Motor Truck Co., Davenport, Iowa.																			
E	1½	135	108	66	42	120	44	48¾	33	29½	8½	25½	24	26	13	19	24	52	....
F	2	146	110	73	37	132	44	48¾	33¾	31	8	25	24	28	13	19	24	52	....
Indiana Truck Corp., Marion, Ind.																			
T	1	135	108	67⅜	40⅝	9	48	46	32	28	10	22	24	31½	18	18½	24	....	900
Q	1½	144	120	71½	48½	10	48	46	33	32½	10	23	24	31½	18	18½	24	....	1050
D	2	150	132	77½	54½	11	48	46	33	32½	10	23	24	31½	18	18½	24	....	1200
C	3½	156	144	83⅜	60⅝	12	52	46	34½	34½	10	23	24	31½	18	18½	24	....	1500
L	5	167	156	89	67	13	56	50	37½	37	8½	25	26	31½	18	18½	26	....	1800
International Harvester Company, Chicago, Ill.																			
H	¾	115	67⅞	57⅞	20	95	46⅜	48⅜	34	32	11	24	24	30	15	18⅞	27	....	900
F	1	128	88¾	60¾	28	118	46⅜	48⅜	34	32	11	24	24	30	15	18⅞	27	....	1000
K	1½	128	92 1/16	62 1/16	30	120	50	50⅜	34	32	11	24	25⅝	30	15½	18⅞	27	....	1100
G	1	146	108¾	69 1/16	30	128	50	50⅜	34	32	11	24	25⅝	30	15½	18¾	27	....	1300
F	2	138	99 1/16	80¾	28	130	46⅜	48⅜	34	32	11	24	24	30	15	18⅞	27	....	1000
K	1½	146	110 1/16	80 1/16	30	134	50	50⅜	34	32	11	24	25⅝	30	15½	18⅞	27	....	1100
G	2	164	125	95	30	148	50	50⅜	34	32	11	24	25⅝	30	15½	18¾	27	....	1300
International Motor Company, New York, N. Y.																			
AB-Worm	1½	144	120	73	47	138	45	43¾	33	33½	4 1/16	22 1/16	16	25¼	19	20	17	....	1300
AB-Chain	1½	144	120	73	47	138	47	43¾	33	31¾	4 1/16	22 1/16	16	25¼	19	20	17	....	1300
AB-Worm	2	144	120	73	47	138	45	43¾	33	32 1/16	4 1/16	22 1/16	16	25¼	19	20	17	....	1300
AB-Chain	2	144	120	73	47	138	47	43¾	33	32½	4 1/16	22 1/16	16	25¼	19	20	17	....	1300
AB-Worm	1½	162	144	91	53	172	45	43¾	33	33⅜	4 1/16	22 1/16	16	25¼	19	20	17	....	1300
AB-Chain	1½	162	144	91	53	172	47	43¾	33	31¾	4 1/16	22 1/16	16	25¼	19	20	17	....	1300
AB-Worm	2	162	144	91	53	172	45	43¾	33	32 1/16	4 1/16	22 1/16	16	25¼	19	20	17	....	1300
AB-Chain	2	162	144	91	53	172	47	43¾	33	32½	4 1/16	22 1/16	16	25¼	19	20	17	....	1300
AC-Chain	3½	156	132	92	40	144	53	60	37½	37	4½	24½	16	29¼	16	20	12	....	2000
AC-Chain	3½	168	156	104	52	168	53	60	37½	37	4½	24½	16	29¼	16	20	12	....	2000
AC-Chain	3½	180	180	116	64	192	53	60	37½	37	4½	24½	16	29¼	16	20	12	....	2000
AC-Chain	5½ & 7½	156	132	92	40	144	54	60	37½	37⅛	4½	24½	16	29¼	16	20	12	....	2000
AC-Chain	5½ & 7½	168	156	104	52	168	54	60	37½	37⅛	4½	24½	16	29¼	16	20	12	....	2000
AC-Chain	5½ & 7½	180	180	116	64	192	54	60	37½	37⅛	4½	24½	16	29¼	16	20	12	....	2000
Kalamazoo Motors Corp., Kalamazoo, Mich.																			
G-19	1½	144	124	78	46	132	46	46	36	32	....	....	27	32	25	20	27	56	....
H-19	2½	160	147	90	57	160	46	46	36	36	....	....	27	32	25	20	27	56	....
K-19	3½	160	147	90	57	168	46	46	36	38	....	....	27	32	25	20	27	56	....
Kankakee Automobile Company, Kankakee, Illinois.																			
E	3	146	124	101	23	144	48	54	32	36	11½	23	29	32	12	19	29	27	....
Kissel Motor Car Co., Hartford, Wis.																			
Delivery	¾	135	8	55	41	8½	44	50	33	35	12	40	25	30	18	22	25	58¾	750
Utility	1½	152	10	70½	49½	10½	50	50	34	29	5	40	25	28⅞	18	22	25	58¾	1000
Freighter	2	168	12	88	56	13	50	50	34	30 1/16	5	40	25	28⅞	18	22	25	58¾	1200
Heavy Duty	3½	168	13	94¾	61¼	14	50	50	36	34½	5	40	25	30	18	22	25	58¾	1600
Goliath	5	180	14	106¾	61¼	15	50	50	36	34½	5	40	25	30	18	22	25	58¾	1800
Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y.																			
U	1-1½	138	108	66½	41½	120	....	50	34	29	9	21	26	29	12½	19	28	....	900
C	2½	152	125	75	50	144	....	52½	36	32	9	23	28	29	12½	19	28½	....	1350
D	2½	170	149	93	56	168	....	52½	36	32	9	23	28	29	12½	19	28½	....	1350
A	3½	172	144½	92½	52	168	....	52½	36	34	8	24	28	32½	12½	19	31½	....	1600
B	3½	154	120½	74½	46	144	....	52½	36	34	8	24	28	32½	12½	19	31½	....	1600
T	5	180	157	99½	57½	180	....	52½	36	36	9	25	28	31½	12½	19	29	....	1800
Louisiana Motor Car Co., Shreveport, La.—Factory, Cedar Grove, La.																			
"2-20"	2½	164	142	87	55	168	46	56	32	32½	....	....	25	33	15	20½	25	29*	1200
*To top of dash.																			
Maccar Truck Company, Scranton, Pa.																			
L	1½	150	128¼	76¼	52	.....	....	....	34	34	....	....	25	....	16	20	....	....	800
H	2½	162	143¾	83¼	60½	.....	....	....	34	35	....	....	25	....	16	20	....	....	1000
M	3½	174	157¾	95¼	62½	.....	....	....	34	36	....	....	25	....	16	20	....	....	1200
U	5½	186	171¼	107	64	.....	....	....	34	37	....	....	25	....	16	20	....	....	1500

Model Name or No.	Cap. in Tons	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Max. Body Weight Recom'd
Master Trucks, Inc., Chicago, Ill.																			
JI	1½	142	120	75¼	44¾	.....	....	....	....	30	....	....	22¼	29¾	14¼	18	23	....	....
JW	1½	142	120	75¼	44¾	.....	....	....	....	30	....	....	22¼	29¾	14¼	18	23	....	....
M	2	144	120	77¼	42¾	.....	....	....	....	30½	....	....	18	28	13½	18	19½	....	....
O	2	170	159	103¼	55¾	.....	....	....	....	30½	....	....	18	28	13½	18	19½	....	....
W	2	144	120	77¼	42¾	.....	....	....	....	30½	....	....	18	28	13½	18	19½	....	....
WL	2	170	159	103¼	55¾	.....	....	....	....	30½	....	....	18	28	13½	18	19½	....	....
T	6	110	74¾	45¼	29½	.....	....	....	....	30½	....	....	18	28	13½	18	19½	....	....
A	3½	158	150	84	66	.....	....	....	....	36¼	....	....	19	30½	16	20	20	....	....
AL	3½	194	186	120	66	.....	....	....	....	36¼	....	....	19	30½	16	20	20	....	....
B	5	170	168	94	74	.....	....	....	....	38¼	....	....	25	30½	16	20	25	....	....
Menominee Motor Truck Co., Menominee, Michigan.																			
Hurryton	1	130	103½	64	39½	.....	58	50	32	....	....	....	....	33	17	19½	24	....	....
H	1½	130	110	63	47	.....	58½	50	32	....	....	....	....	33	17	19½	26	....	....
H	1½	144	122	77	45	.....	58½	50	32	....	....	....	....	33	17	19½	26	....	....
D	2	144	134	77	57	.....	58½	50	32	....	....	....	....	33	17	19½	26	....	....
D	2	160	146	93	53	.....	58½	50	32	....	....	....	....	33	17	19½	26	....	....
G	3½	160	154½	91	63½	.....	66¾	50	36	....	....	....	....	32½	17	19½	26½	....	....
J	5	160	155½	91	64½	.....	69½	50	38	....	....	....	....	31	17	19½	26½	....	....
Moreland Motor Truck Co., Los Angeles, Cal.																			
19-B	1½	126	108	59⅝	48¾	108	66	39	34	31	6	22	26⅜	30	16½	19⅞	27	58	....
19-B	1½	150	132	83⅝	48⅜	132	66	39	34	31	6	22	26⅜	30	16½	19⅞	27	58	....
19-C	2½	144	132	77¼	55	132	72	39	34	33	6	24	26⅜	30	16½	19⅞	27	58	....
19-C	2½	168	156	101¼	55	156	72	39	34	33	6	24	26⅜	30	16½	19⅞	27	58	....
19-G	4	162	144	89⅜	54¼	144	84	42⅞	38	35	6	24	26⅜	30	15½	19⅞	27	58	....
19-G	4	186	168	113¾	54¼	168	84	42⅞	38	35	6	24	26⅜	30	15½	19⅞	27	58	....
19-J	5	192	168	123⅛	47⅞	168	84	42⅞	36	38	6	27	26⅜	30	15½	19⅞	27	58	....
Muskegon Engine Co., Muskegon, Mich.																			
20	2	144	119½	74½	45	132	49	50½	34	30½	10	24½	19½	30	18	14	18⅝	50½	1200
E. A. Myers Co., Pittsburgh, Pa.																			
60	1	130	102	58	44	108	48	44	36	24	6	21	26	29	15	18	26	50	1000
80	1½	144	112	72	40	120	48	44	36	25½	5	21	26	29	15	18	26	50	1200
Napoleon Motors Co., Traverse City, Michigan.																			
9 & 11	1 & 1½	132	102	59	43	108	39½	45	35	28	10	26½	22	30	16½	22	28	49	400
Nash Motors Co., Kenosha, Wis.																			
2018	1	130	104¼	60¾	43½	120	66	45	36	30	7⅞	....	24	26¾	15⅝	19¾	24	....	950
3018	2	144	118¼	74¾	43½	132	72	45	33½	30½	5⅞	....	24	26¾	15⅝	19¾	24	....	1200
4017	2	124	117⅛	85⅝	31½	132	72	55½	38⅛	35½	4	....	....	....	....	17¾	....	....	1200
Nelson Motor Truck Co., Saginaw, Mich.																			
D	2	152½	116	79	37	137	72	46	34	28½	....	....	18¾	28	14	20	19½	57½	....
E	2	168	159¼	94¾	64½	174	72	46	34	28½	....	....	18¾	28	14	20	19½	57½	....
C Tractor	5-7	108	71	34½	36½	.....	....	46	34	28½	....	....	18¾	28	14	20	19½	57½	....
Niles Motor Truck Co., Pittsburgh, Pa.																			
E	2	140	114	74	40	132	60	49	34	32	....	....	25¼	24	13	18	25¼	54	1200
E	2	150	...	84	30	132	60	49	34	32	....	....	25¼	24	13	18	25¼	54	1200
Noble Motor Truck Corporation, Kendallville, Indiana.																			
NW1	1½	146	124	76	48	120	44½	48	34	30¼	10	22	23	30½	16¼	20	23½	....	1050
NW2	2½	172	131	76	53	144	42	48	34	31¼	10	22	26	30½	16¼	20	26½	....	1350
NW4	4	168	172	100	72	168	49	48	36	34	10	22	26	30½	16¼	20	26½	....	1700
Old Reliable Motor Truck Co., Chicago, Ill.																			
Worm A	1½	138	105	58	47	105	....	36	32	32	....	....	28	30	14	19½	30	28	....
Worm B	2½	160	144	92	52	144	....	36	32	32	....	....	29	32	14	18½	32	30	....
Worm C	3½	160	150	92	58	150	....	38	34	36	....	....	30¼	32	14	18½	32	30	....
Worm D	5	166	156	98	58	156	....	38	34	36	....	....	30¼	32	14	18½	32	30	....
Chain E	2½	136	144	96	48	144	....	36	32	30	....	....	....	39¼	25½	16¾	....	....	....
Chain K	7	136	168	103½	54½	168	84	40½	36	39	....	....	....	39¼	25½	16¾	....	....	....
L Dump Body	7	124	121½	91½	29½	120	84	40½	36	39	....	....	....	39¼	25½	16¾	....	....	....
Oneida Motor Truck Co., Green Bay, Wisconsin.																			
A	1	130	117	65	52	126	50	50	32	41½	....	....	21	34	16¾	18½	22½	64	....
A	1	144	129	79	50	138	50	50	32	41½	....	....	21	34	16¾	18½	22½	64	....
B	1½	130	117	65	52	126	50	50	32	42	....	....	21	34	16¾	18½	22½	64	....
B	1½	144	129	79	50	138	50	50	32	42	....	....	21	34	16¾	18½	22½	64	....
C	2	144	129	79	50	138	50	50	32	43½	....	....	21	34	16¾	18½	22½	64	....
C	2	160	153	95	58	162	50	50	32	43½	....	....	21	34	16¾	18½	22½	64	....
D	3½	160	142	98½	43½	162	54	54	36	43½	....	....	21	33¼	16¾	18½	23	64	....
D	3½	170	162	108½	53½	180	54	54	36	43½	....	....	21	33¼	16¾	18½	23	64	....
E	5	170	178½	97	81½	180	56	58	38	46½	....	....	21	32¾	16¾	....	23¼	64	....
E	5	190	178½	117	61½	180	56	58	38	46½	....	....	21	32¾	16¾	....	23¼	64	....
Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.																			
A	2	130	111⅞	78⅞	33	132	72	53½	34	31½	8½	25½	20	33¼	14	20	21	55	....
AA	2	165	146⅞	78⅞	33	166	72	53½	34	31½	8½	25½	20	33¼	14	20	21	55	....
Packard Motor Car Co., Detroit, Mich.																			
1½E	1½	126	109	63⅛	45⅞	109	67⅝	44½	31¾	29⅛	5⅛	....	24½	31	15⅛	18½	27½	....	1250
1½E	1¾	144	126	81⅛	44⅞	144	67⅝	44½	31¾	29⅛	5⅛	....	24½	31	15½	18½	27½	....	1250
2E	2	144	132	81⅛	50⅞	150	69¼	44½	31¾	29⅝	5¼	....	24½	31	15½	18½	27⅛	....	1500
2E	2½	168	168	105⅛	62⅞	192	69¼	44½	31¾	29⅝	5¼	....	24½	31	15½	18½	27⅛	....	1500
3E	3	156	144	89⅞	54⅛	162	81⅞	44½	39	31	5	....	24½	31	16½	18½	27⅛	....	2000
3E	3½	186	192	119⅞	74⅛	222	81⅞	44½	39	31	5	....	24½	31	16½	18½	27⅛	....	2000
4E	4	156	144	89⅞	54⅛	162	83⅝	44½	39	33	4¾	....	24½	31	16½	18½	27⅛	....	2000
4E	4½	186	192	119⅞	74⅛	222	83⅝	44½	39	33	4¾	....	24½	31	16½	18½	27⅛	....	2000
5E	5	156	144	89⅞	54⅛	162	88¾	44½	39	34¾	5⅞	....	24½	31	16½	18½	27	....	2500
5E	5½	186	192	119⅞	72⅛	222	88¾	44½	39	34¾	5⅞	....	24½	31	16½	18½	27	....	2500
6E	6	156	144	89⅞	54⅛	162	88¾	44½	39	34¾	5⅞	....	24½	31	16½	18½	27	....	2500
6E	6½	186	192	119⅞	72⅛	222	88¾	44½	39	34¾	5⅞	....	24½	31	16½	18½	27	....	2500
Paige Detroit Motor Car Co., Detroit, Mich.																			
50-18S	2½	150	126	73	51	144	39	51	33	33½	....	....	23½	33	18½	23½	27	65¼	1200
50-18L	2½	170	162	93	67	180	39	51	33	33½	....	....	23½	33	18½	23½	27	65¼	1200
51-18S	3½	160	144	91	53	168	43¼	51	35	36	....	....	23½	32	18½	23½	27	65¼	1600
51-18L	3½	186	192	117	75	202	43¼	51	35	36	....	....	23½	32	18½	23½	27	65¼	1600
Piedmont Motor Car Co., Inc., Lynchburg, Va.																			
Piedmont	...	130	140	56	44	64	54	49	36	27	....	....	27	26	10	20	26	50	....
Pierce-Arrow Motor Car Co., Buffalo, N. Y.																			
X-4	2	150	125	77	48	138	72	45½	34⅛	30	....	....	24½	29¼	16½	20¼	24½	56½	1500
X-4	2	180	155	107	48	168	72	45½	34⅛	30	....	....	24½	29¼	16½	20¼	24½	56½	1500
R-9	5	168	144	90	54	168	84	56	38⅛	36	....	....	23	31¼	18¼	18⅜	23	58½	2500
R-9	5	204	180	126	54	204	84	56	38⅛	36	....	....	23	31¼	18¼	18⅜	23	58½	2500
Reo Motor Car Co., Lansing, Mich.																			
F	¾	128	96	70½	25½	.....	46¼	....	30	28	..	23¾	....	29¼	....	....	....	....	....
Republic Motor Truck Co., Alma, Mich.																			
9S	¾	128	104⅛	61⅞	42¼	108	60	44	35½	27	12	24	18¾	27¼	13½	18⅛	16¼	51½	....
10	1	124	98	55½	42½	108	60	44	34	28	13	24	17¼	28½	13½	18⅛	18	51	....
11X	1½	144	118	75½	42½	144	72	44	34	28	13	24	17¼	28½	13½	18⅛	18	51	....
19	2	144	121	74½	46½	144	72	44	34	32	11	24	19⅛	28	13½	18⅛	17¾	51¼	....
19A	2	168	164	98½	65½	168	72	44	34	32	11	24	19⅛	28	13½	18⅛	17¾	51¼	....
20	3½	165	146	92⅞	53⅛	168	72	55	37	32	....	....	20⅛	28	13½	18⅛	21¾	60	....
20A	3½	185	166	112⅞	53¼	.....	....	55	37	32	....	....	20⅛	28	13½	18⅛	21¾	60	....
20B	3½	156	117½	83⅝	33⅞	.....	....	55	37	32	....	....	20⅛	28	13½	18⅛	21⅜	60	....



Model Name or No.	Cap. in Tons	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Max. Body Weight Recom'd
Royal Motor Truck Co. of N. Y., Brooklyn, N. Y.																			
	1	128	108	68½	38	112	48	42	34	31½	6	23	24	28	18	18	23½	....	....
	1½	128	108	68½	38	112	48	42	34	31½	6	23	24	28	18	18	23½	....	....
	2	132	124	84	40	132	54	42	34	32½	8	24	24	28	18	18	23½	....	....
	2½	132	124	84	40	132	54	42	34	32½	8	24	24	28	18	18	23½	....	....
	3½	158	132	86	46	138	60	43	36	33½	8	24	25	28½	18	18½	24	....	....
	5	168	132	86	48	138	68	43	36	34	10	26	25	28½	18	18½	24	....	....
	6	168	134	86	48	140	68	44	36	34	10	26	25	28½	18	18½	24	....	....
	7	168	134	86	48	140	70	44	36	34	10	26	26	28½	18	19	24½	....	....
Rowe Motor Mfg. Co., Lancaster, Pa.																			
C. D. W.	2	140	123	81	42	132	57	45	33	35	8	45	23	33	17¾	19	21	....	....
C. D. W.	2½	162	146	103½	42	150	57	45	33	35	8	45	23	33	17¾	19	21	....	....
D. E. W.	3½	156	150	97½	52½	156	51	45	36	40	8	45	23	33	17¾	19	21	....	....
F. W.	5	168	156	108	48	168	56	45	38½	41½	8	45	23	32	17¾	19	21	....	....
G. W.	3	170	144	111	42	150	57	45	33	39	8	45	23	33	17¾	19	21	....	....
Sanford Motor Truck Co., Syracuse, N. Y.																			
25	2½	156	126½	82½	44	144	47	50	35	32	9	23	25	30½	15	20	18½	....	1400
25	2½	174	144½	100½	44	168	47	50	35	32	9	23	25	30½	15	20	18½	....	1400
35	3½	174	145½	97½	48	168	48	50	35	35	7	24	25	30½	15	20	18½	....	1600
50	5	174	145½	97½	48	168	54	50	35	37¼	7	24	25	30½	15	20	18½	....	1800
G. A. Schacht Motor Truck Co., Cincinnati, O.																			
Schacht	2	144	116	78	38	120	50	51⅞	35¾	33	7	25	24	30	16¼	19	23	55½	....
	2	156	140	90	50	144	50	51⅞	35¾	33	7	25	24	30	16¼	19	23	55½	....
	2½	144	116	78	38	120	50	51⅞	35¾	33	7	25	24	30	16¼	19	23	55½	....
	2½	156	140	90	50	144	50	51⅞	35¾	33	7	25	24	30	16¼	19	23	55½	....
	2½	168	152	102	50	156	50	51⅞	35¾	33	7	25	24	30	16¼	19	23	55½	....
	3½	156	140	90	50	144	50	51⅞	35¾	33	7	25	24	30	16¼	19	23	55½	....
	3½	168	152	102	50	156	50	51⅞	35¾	33	7	25	24	30	16¼	19	23	55½	....
	3½	180	176	114	62	180	50	51⅞	35¾	33	7	25	24	30	16¼	19	23	55½	....
	5	156	140	90	50	144	50	51⅞	35¾	33	7	28	24	30	16¼	19	23	55½	....
	5	168	152	102	50	156	50	51⅞	35¾	33	7	28	24	30	16¼	19	23	55½	....
	5	180	176	114	62	180	50	51⅞	35¾	33	7	28	24	30	16¼	19	23	55½	....
Selden Motor Vehicle Company, Rochester, N. Y.																			
1½A	1½	137½	113⅞	70⅞	43	120	50	47	34	32	11¼	24⅝	22⅞	34¾	17½	17⅞	22	....	1050
JWB	2	151⅜	118¼	75⅝	42⅝	132	48	51¼	34	33½	8½	22 13/16	22⅞	35½	19½	18¾	24	....	1200
JWBL	2	162	141¼	86¼	55	144	48	51¼	34	33⅝	8½	22 13/16	22⅞	35½	19½	18¾	24	....	1200
NL	3½	164	158	91½	66½	156	52	47¼	34	40	8	25	24⅞	35⅞	18¼	20¼	25	....	1600
DL	5	169½	168⅜	108⅜	60⅜	168	52	55¼	36	37¼	12½	28½	24⅞	34½	19¼	20¼	25⅛	....	1800
Service Motor Truck Co., Wabash, Ind.																			
220	1	137	109½	70½	39	120	60	45	34	28	10½	24	24	31¼	16	20	26	....	900
31	1½	150	121	81⅛	40	132	60	52	34	29¼	10½	24	24 5/16	31	16¾	21	24⅜	....	1050
41	2	160⅛	131⅛	91¼	39⅞	156	72	52	34	31½	10½	24	24 5/16	31	16¾	21	24⅜	....	1200
71	3½	171	150¾	104½	45¾	168	78	52	38	34⅛	7	24	24 5/16	31⅝	16¾	21	26⅝	....	1600
76	3½	171	145¾	100	45¾	168	78	52	38	34⅛	7	24	24 5/16	31⅝	16¾	21	25 5/16	....	1600
101	5	171½	145¾	100½	45¼	168	84	52	38	37⅜	8½	24	24 5/16	31⅝	16¾	21	25 5/16	....	1800
Welden W. Shaw Livery Co., Chicago, Ill.																			
M-2	¾	116½	86	58	28	100	50	50	....	28	10	21½	24	28¼	14	16	24½	54	750
M-4	1	130	96½	56½	40	104	50	50	32	29½	10	22	24	28¼	14	16	24½	54	900
M-5	1-1½	132	98½	58½	40	104	50	50	34	30½	10	23	24	28¼	14	16	24½	54	1000
M-3	2	153	126½	76	50½	136	50	50	32	31½	10	23½	25	33½	14	25	25	54	1200
Signal Motor Truck Co., Detroit, Mich.																			
F	1	146	120	75	45	132	48	45	34	29	....	....	22	35	17½	22	25	....	800
H	1½	146	120	75	45	132	48	45	34	30	....	....	22	35	17½	22	25	....	800
J	2	150	126	76	50	138	48	45	34	30	....	....	22	35	17½	22	25	....	1200
M	3½	168	168	89	79	180	50	48	38	36	....	....	22	35	17½	22	25	....	1600
R	5	180	172	93	79	184	52	48	38	36	....	....	22	35	17½	22	25	....	2000
Standard Motor Truck Co., Bellevue Ave., Detroit, Mich.																			
76	2	140	122	79	43	144	66	46	32	31½	....	....	25	31½	15½	20	25	....	....
66-S	3½	160	144	94	50	144	78	46	38	34	....	....	25	31½	15½	20	25	....	....
86	5	160	144	94	50	144	78	46	38	34	....	....	25	31½	15½	20	25	....	....
Sterling Motor Truck Co., Milwaukee, Wis.																			
	2½	156	131	84 9/16	46½	138	72	48	34	31½	10	23½	25¾	30½	17½	21	26	54¼	1350
	3½	162	138	85	53	144	87	58	38	34⅞	11½	26⅜	25¾	35	17½	21	28	54¾	1600
	5	168	146	91	55	156	89	58	38	36½	8½	25	25¾	35	17½	21	28	54¾	1800
	7	168	147	92	55	156	93	54	40	36⅞	9½	26⅜	25¾	31½	17½	21	25½	54¼	2000
Steward Motor Trucks, Buffalo, N. Y.																			
6	¾	110	77½	46½	31	84	47½	46	32	26	12½	21	22¼	25	12¼	18	24	51¼	600
8	1	130	99½	58⅜	41⅛	108	46	46	32	28	13	24	20½	30	15½	18¾	20	58	720
9	1½	140	119	66	53	120	46	46	32	28	13	24	20½	30	15½	18¾	20	58	1100
7	2	156	132½	79⅛	53⅜	144	46	46	32	30	10	24	20½	30	15½	18¾	20	57	1300
7	2	174	150½	97⅛	53⅜	168	46	46	32	30	10	24	20½	30	15½	18¾	20	57	1300
10	3½	165	139⅜	80	60	156	52	58	32	35	7	25	22	32½	16	18¾	20	57	1400
10	3½	185	159¾	100	60	176	52	58	32	35	7	25	22	32½	16	18¾	20	57	1400
Superior Motor Truck Co., Atlanta, Ga.																			
A	1	124	98	58	40	118	61¼	40¾	34	27	....	....	17¼	26⅜	14	18	18½	....	700
E	2	144	114	75⅝	38⅜	144	66¾	40¾	34¼	29	....	....	16⅜	26¾	14	18	18⅛	....	1000
Titan Truck Co., Milwaukee, Wis.																			
3½-ton	3½	162	12	94	50	156	84	56	34	36	4	....	24	32½	18	20	26½	57	1800
3½-ton	3½	180	15	112	68	192	84	56	34	36	4	....	24	32½	18	20	26½	57	1800
5 to 6-ton	6	156	12	88	56	156	84	56	34	37	3	....	24	32½	18	20	26½	57	1800
5 to 6-ton	6	180	15	112	68	192	84	56	34	37	3	....	24	32½	18	20	26½	57	1800
Tower Motor Truck Co., Greenville, Mich.																			
F	2	146	139	76	63	144	....	48	32½	31	....	....	26	36	19¼	17	31	....	....
G	3½	165	153	91	62	168	....	49	37	32¾	....	....	26	31	19¼	17	31	....	....

Model Name or No.	Cap. in Tons	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Max. Body Weight Recom'd
Traffic Motor Truck Corp., St. Louis, Mo.																			
Traffic	2	133	122	68⅞	53⅛	126	60	39	....	31½	8	27	26½	27¼	11¾	17¼	27	31*	500
*Height of dash.																			
Transport Truck Company, Mt. Pleasant, Mich.																			
20	1	130	101	61⅝	39⅜	.....	61	52	34	30	9½	22	19	33	....	19¾	18	....	....
30	1½	140	116⅝	72½	44⅛	.....	73	52	34	30¾	7¾	20¼	19	33	....	19¾	18	....	....
50	2	150	123	77½	44¾	.....	73	52	34	31¾	7	21	19	31	....	19¾	16½	....	....
50A	2½	170	152	97½	59¾	.....	73	52	34	32¼	7	21	19	31	....	19¾	16½	....	....
Triangle Motor Truck Co., St. Johns, Mich.																			
A	1½	144	126	77⅞	48⅛	132	...	44½	34	28	....	....	17½	25¾	10	18	20	55	1050
B	2½	151	132	84	48	144	....	44½	34	28	....	....	17½	25¾	10	18	20	55	1200
The Turnbull Motor Truck & Wagon Co., Defiance, Ohio.																			
B	1½	135	115¼	72¼	43	144	72	50	34	31	....	....	25¼†	29¾	15	18¾	25*	....	1000
C	2	135	115¼	72¼	43	144	72	50	34	31	....	....	25¼†	29¾	15	18¾	25*	....	1000
*Front of dash to front of seat. †Front of dash to heel board.																			
The U. S. Motor Truck Co., Cincinnati, Ohio.																			
N	1½	144	120	82	38	132	66	52½	34	30	9⅛	....	24½	....	15½	19	24½	....	1050
H	2½	144	132	82½	47½	144	70	48	36	32½	6⅞	....	23	30½	18½	20	23½	56¼	1350
J	3½	161	156	95¾	58¼	168	80	48	39	36½	6½	....	23	30½	18½	20	23½	56¼	1600
K	5	168	168	101	67	180	88	48	39	37⅞	3	....	23	30½	18½	20	23½	56¼	1800
Velie Motors Corporation, Moline, Ill.																			
46	1½	133	120	70	50	120	....	42	31	30	9	....	....	....	....	....	....	....	1200
25-B	2	152	136	81½	54½	136	....	54	33	33	10	....	....	....	....	....	....	....	1400
26-B	3½	174	155	100	55	155	....	54	37	34	10½	....	....	....	....	....	....	....	1600
Vim Motor Truck Co., Philadelphia, Pa.																			
21	1½	108	64¼	40	18	76¼	....	52¾	29¾	27¼	9½	22¾	21½	27	15½	18	21½	41¾	....
25	1	120	94	60	34	112	....	54	32	29	10½	27	25¾	32¾	15½	16½	25¾	55½	....
22	2	142	120	77½	42½	144	....	41¾	34	30½	....	....	25⅞	33½	24	19	25⅞	....	....
23	3	175	160	106½	53½	196	....	41¾	34	33	....	....	25⅞	35¼	24	19	25⅞	....	....
Walker Vehicle Company, Chicago, Ill.																			
M	½	93	87	62	25	.....	47	47	32	33	7	24	24½	30	17	22½	26	....	800
K	1	96	96	67	29	.....	47	48	32	34	6	24	26	30	17	22½	26	....	1100
L	2	112	120	83	37	.....	47	48	32	34	7½	27	26	30	17	22½	26	....	1500
P	3½	131	140	106	34	.....	47	52	35	38	5	27	26	30	17	22½	27½	....	1800
N	5	141	162	116	46	.....	47	52	35	38	5	27	26	30	17	22½	27½	....	2000
Ward LaFrance Truck Co., Elmira, N. Y.																			
2A & 3A	2 & 3	154	144	81	63	150	76	52	33	35	8	25	25	30	14	22	25	....	1150
2A & 3A	2 & 3	166	168	93	75	174	76	52	33	35	8	25	25	30	14	22	25	....	1150
2A & 3A	2 & 3	178	192	105	87	198	76	52	33	35	8	25	25	30	14	22	25	....	1150
3½A	3½	158	144	81	63	150	76	52	33	35	8	25	25	30	14	22	25	....	1400
3½A	3½	170	168	93	75	174	76	52	33	35	8	25	25	30	14	22	25	....	1400
3½A	3½	182	192	105	87	198	76	52	33	35	8	25	25	30	14	23	25	....	1400
Wichita Falls Motor Co., Wichita Falls, Texas.																			
K	1	144	127½	88¼	39¼	.....	52	45	30	33½	....	....	25	27½	17	18	27	26½	....
L	1½	144	127½	88¼	39¼	.....	53½	45	30	33½	....	....	25	27½	17	18	27	26½	....
M	2	144	126½	87½	39	.....	57	45	30	33½	....	....	25	27½	17	18	27	26½	....
R	2½	144	126½	87½	39	.....	50	45	30	33½	....	....	25	27½	17	18	27	26½	....
RX	2½	144	152½	78¾	73¾	.....	50	45	30	33½	....	....	25	27½	17	18	27	30⅝	....
O	3½	165	152½	97½	55	.....	54	51	36	36	....	....	25	29	17	18	28½	27	....
Q	5	165	152½	97½	55	.....	67⅜	51	36	37	....	....	25	29	17	18	28½	27	....
S	6	165	163½	101	62½	.....	63	51	36	41	....	....	26½	29	17	18	28½	27	....
H. E. Wilcox Motor Co., Minneapolis, Minn.																			
A	1	130	96	57	39	114	47	50	34	31	10	23½	26	31	16½	18	24	....	1000
B	1½	144	132	80¾	51¼	144	47	49	33	32	10	23½	26	31	16½	18	24	....	1200
C	2½	150	144	86¾	54¼	168	47	49	33	32½	10	23½	26	31	16½	18	24	....	1300
D	3½	154	153	90¾	62¼	192	51	49	33	34½	10	23½	26	31	16½	18	24	....	1600
W	5	162	153	92¾	60¼	186	56	53	38	36	10	23½	26	31	16½	18	24	....	2000
J. C. Wilson Co., Detroit, Mich.																			
F	1	124	90	58½	31½	108	47	50	34	28½	9	21½	13½	25	15½	18	25	....	....
E	2	144	126	80½	45½	144	....	42	33	32	11	27	25	29	15	20	25	....	....
G	3½	160	147	92½	54½	168	....	50	38	35	10	29	26	32	17	20	26½	....	....
H	5	160	147	92½	54½	168	....	50	38¼	37	12	31	26	32	17	20	26½	....	....
Winther Motor Truck Co., Kenosha, Wis.																			
39	1½	140	117	78	39	120	48	40	30	32	8	23	18	31	15	19	20	51	1000
439	1½	132	115	78	37	120	48	40	30	33	6	23	17	34½	19	19	18	55½	1000
49	2	150	144	84	60	144	48	51	33	35	7	24	16	35	19	19	18	54	1200
69	3	150	144	84	60	144	56	51	33	36	6	24	16	36	19	19	17	54	1500
479	3½	158	142	93	49	144	56	51	33	37	5	24	16	34	21½	19	17	55	1650
89	4	156	156	90	66	156	48	51	33	39	8	27	16	34	17	19	17	52	1800
109	5	162	156	91	65	156	48	51	33	40	7	27	16	34	17	19	17	52	2000
129	6	162	156	91	65	156	48	51	33	40	7	27	16	34	17	19	17	52	2250
149	7	162	156	91	65	156	48	51	33	40	7	27	16	34	17	19	17	52	2500
979	3½	168	168	102	66	168	48	51	33	38	10	27	16	35	19	19	18	54	1650

The Bessemer Oil Field Body

Body Designed Especially for Use in Oil Fields

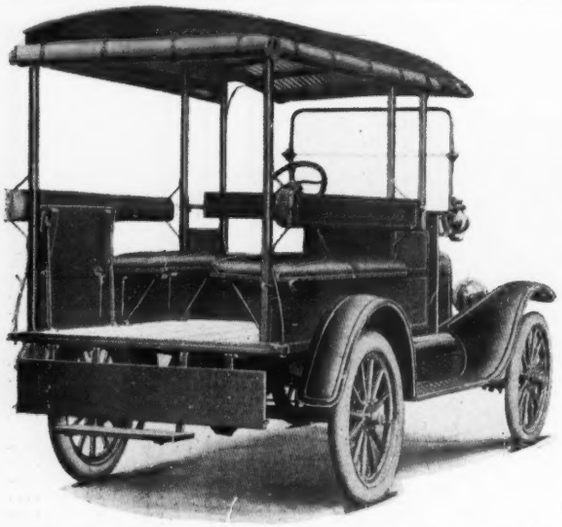
The requirements encountered by trucks in the oil fields of West Virginia and western Pennsylvania have proven to be very severe. Most of the loads consist of long parts, such as standard lengths of piping and derrick material. These overhang at the rear of the truck, and owing to the extremely poor roads which must be traversed in the mountains, the overhung load sways violently and sets up severe rocking strains in the body as well as in all parts of the rear of the truck. The average body will not stand up under these conditions.

In order to provide a body which will give good service in this field, the Bessemer Motor Truck Co., of Grove City, Pa., has developed what they call their line of "Hope" bodies, so called because

they were developed in the first place for the Hope Natural Gas Co. Since perfecting these bodies for this company they have been used widely throughout the oil field.

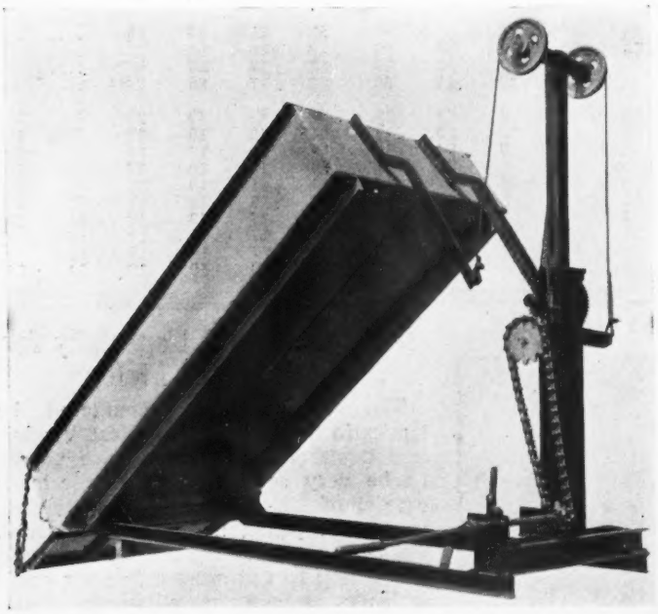
The peculiar feature of this body is that it consists of a framework of 5-in. standard channel iron on the 2 and 2½-ton trucks; two 192-in. channel irons are connected by nine cross members of the same material. Connection in every instance is made by means of hot driven rivets in drilled holes. On top of these cross members a plank floor is laid. The cross members are so located that the floor comes exactly flush with the top of the side channel. These floor planks are bolted to each of the nine cross channels with two bolts each, large carriage bolts being employed. Contact is provided for the top of the chassis by wood filler blocks of 2 x 4 size. Where these filler blocks cross the chassis frame a large total bearing area is provided.

Clip bolts are used to secure this body to the chassis without resorting to any drilling. Owing to the heavy nature of the material handled the sides of these bodies do not have to be high. The front end of the body is integral with the platform. The side boards are of the same height, namely 11½ in., but provided with stakes and removable.



The Archer Hoist and Body. Built by the Archer Iron Works, Western Avenue & 34th Place, Chicago

This company builds a complete line of dump bodies, fitted with hand-operated hoist, in eight sizes, to take care of all capacities from one to five tons. Prices range from $179.50 to $450.00. The lowest-priced outfit is designed especially for Fords, has a body capacity of 1 cubic yard, while the five-ton size will carry 4 cubic yards. The prices include the hoist and body complete. Further details on this equipment can be found in our April, 1919, issue, page 58.

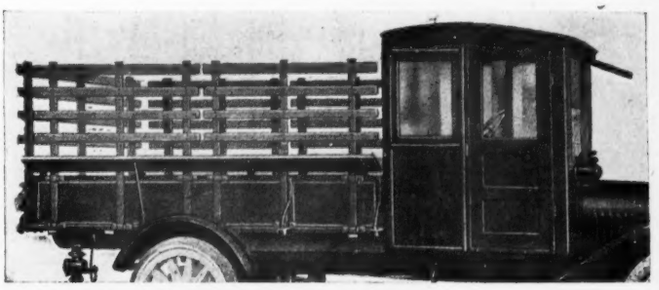


Columbia No. 74-A Combination Commercial and Passenger Body. Built by the Columbia Wagon Company, Columbia, Penna.

This body is designed especially for Ford chassis and can be used either for express work or carrying passengers. Dimensions of the body are 5 feet 4 inches from rear of seat, 3 feet 7 inches wide, 4 feet 6 inches high. The body is finished in natural wood finish with tan duck curtains and trimmings. This company also builds a complete line of special panel, stake and express jobs for all size trucks, with special attention being paid to Fords, Vims, and Ford one-ton chassis.

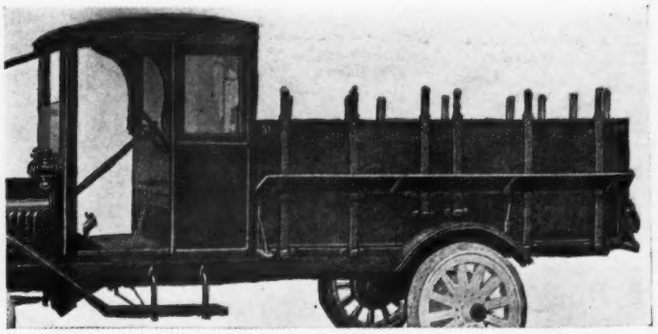
Heil Combination Dump Body. Built by the Heil Company, Milwaukee, Wisconsin

The upper illustration shows the "Heil 3-in-1 model," the front and rear of which is made high enough to take an additional set of sides. The lower illustration shows the "Heil 4-in-1 body" fitted with two sets of sides, double-acting tail-gate and a manual tail-gate control. The lower set of sides gives the correct capacity for hauling gravel and the upper set gives the correct capacity for hauling coal. These bodies are made in six sizes, to take care of two to five-ton capacity trucks.



"Every-Purpose" Farm Body, Model No. 224. Built by the Commercial Auto Body Company, St. Louis, Mo.

This illustration shows this body with stock-rack in place. The stock-racks measure 33 inches above the panels and are substantially constructed of hardwood and bolted together. They are built in two sections on the side, one section in the rear, and are easily removed. The stakes fit through flare-boards into the stake-sockets.



The "Every-Purpose" Body With Grain Type Panels in Place

All the joints are fitted and the panels arranged with special designed front and rear slip-in panels. This body can be furnished with either open cab (windshield extra) or closed cab, as shown in the illustrations.

KEY OF ABBREVIATIONS

Used in the Specifications of Commercial Cars Listed on the Pages Following

Own—Own Make
Opt—Optional

Engine: Cont—Continental
Her—Hercules
H-Sp—Herschell-Spillman
Lite—Light Mfg. & Foundry Co.
Lyco—Lycoming
Ster—Sterling
Wau—Waukesha
Wis—Wisconsin

Valve Location: L—ELL-Head
T—TEE-Head
O—Overhead

How Cooled: C—Centrifugal Pump
G—Gear Pump
P—Water Pump
T—Thermo-Syphon
W—Water

Radiator (Make or Type): Bus—Bush
Can—Candler
EM—English-Mersick
Eur—Eureka
Fed—Fedders
Flex—Flexo
GO—G. & O.
Har—Harrison
Hovn—Hooven
Idl—Ideal
JMS—Jamestown
Lng—Long
McC—McCord
May—Mayo
MR—Marlin-Rockwell
Per—Perfex
R-T—Rome-Turney
Stan—Standard

C—Cellular
T—Tubular
H—Honeycomb

Tires: (Solid unless otherwise stated)
*—Pneumatic
†—Dual
S—Steel
T—Triple

Lubrication: C—Centrifugal Pump
Fo—Force-Feed
FG—Force and Gravity
FS—Force and Splash
Sp—Splash Feed
P—Water Pump

Carburetor: B&B—Ball & Ball
Cart—Carter
Ens—Ensign
Flch—Flechter
Holl—Holley
John—Johnson
Mar—Marvel
Mas—Master
Mill—Miller
Strm—Stromberg
Shk—Shakespeare
Sheb—Schebler
Spc—Special
Till—Tillotson
Zen—Zenith

Ignition System: (Make or Type)
At-Kt—Atwater Kent
Au-L—Auto-Lite
Bat—Battery
Bosh—Bosch
Berl—Berling
Conn—Connecticut
Delc—Delco
Dix—Dixie
Eism—Eisemann
King—Kingston
Mag—Magneto
NE—North East
POL—Prest-O-Lite
Sim—Simms
Spld—Splitdorf

Engine Starter: Au-L—Auto Lite
Bosh—Bosch
Bij—Bijur
Dyn—Dyneto
G&D—Gray & Davis
L-N—Leece-Neville
West—Westinghouse

Clutch: B—Borg & Beck
C—Cone
D—Disc
F—Fuller
G—Detroit Gear & Machine
H—Hartford
L—Brown-Lipe
M—Merchant & Evans (Hele-Shaw)
U—Muncie
W—Warner
O—Own

Transmission: B-Lipe—Brown-Lipe
Cott—Cotta
Covt—Covert
D-Sea—Driggs-Seabury
Det—Detroit
Durst—Durston
Full—Fuller
G-Lee—Grant-Lees
I-Cl—Individual Clutch
MM—Mechanics Machine Co.
Munc—Muncie
Plan—Planetary
Prog—Progressive
Rock—Rockford
Selec—Selective
Warn—Warner

Drive: B—Bevel Gear
C—Chain
Ct—Concentric Spur
F—Friction
I—Internal Gear
O—Own
R—Roller
S—Shaft
SB—Spiral Bevel
Sp—Spur
W—Worm

Universal: Arv—Arvac
Bld—Blood Brothers
Hart—Hartford
K-B—Kinsler-Bennett
M—Merchant & Evans
Spic—Spicer
Ther—Thermoid
UM—Universal Machine Co.
UP—Universal Products Co.

Rear Axle: Cel—Celfor
Chic—Chicago
Cl—Clark
Emp—Empire
Rock—Rockford
Russ—Russel
Sals—Salisbury
Shel—Sheldon
Timk—Timken
Torb—Torbensen
W-M—Weston-Mott

Flot—Full Floating
½-Fl—Semi-Floating
¾-Fl—¾ Floating
⅞-Fl—⅞ Floating

Spring Suspension:
CC—Cleveland-Canton
Det—Detroit
GC—Garden City
IC—Iron City
Kal—Kalamazoo
Mar—Maremont
Math—Mather
Nat—National
Row—Rowland
Per—Perfection
Shel—Sheldon
SP—Spring Perch
Stan—Standard
Ster—Sterling
Tut—Tuthill
US—United States

Cant—Cantilever
Elip—Full Elliptic
S-El—Semi-Elliptic
¾-El—¾-Elliptic
S&C—Semi-Elliptic and Cantilever
S&¾—Semi-Elliptic and ¾-Elliptic

Steering Gear:
CAS—C. A. S. Products Co.
Dit—Ditwiler
Gem—Gemmer
Jac—Jacox
Lav—Lavine
W—Worm
Warn—Warner
Wohl—Wohlrab

Governor: C—Centrifugal
Cont—Continental
Del—Delaney
Dup—Duplex
McC—McCanna
Mer—Merrill
Mon—Monarch
Pier—Pierce
Rug—Ruggles
Simp—Simplex
Wau—Waukesha

EXTRA ABBREVIATIONS USED ON ELECTRICS

Battery: Exid—Exide
Edis—Edison
Phil—Philadelphia

Motor: Gn-El—General Electric Co.
West—Westinghouse

Controller: Gn-El—General Electric Co.
West—Westinghouse

Commercial Car Specifications—Corrected Monthly

The Specification, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers. Gasoline Tractor-Trucks and Electric Commercial Cars Will be Found at the End of Gasoline Commercial Cars

(Where prices are not given they may be had on application to the manufacturer)

G. C. M. Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
800 Pounds															**800 Pounds**													
Minnesota	800	320	Own	4	2¾x4	12.8	3	1/16	L	T	H	FS	Strom	At-K	.....	.....	Fric	3	Dead	Own	Ch	92	Tut	28x3	28x3	Own	.....	60
Overland	1777	900	Own	4	3⅜x5	18.2	4	1/16	L	T	C	FS	Till	Conn	Au-L	C	Selec	3	Own	B	¾-Fl	104	S&C	31x4*	31x4*	Own	.....	63.8
1000 Pounds															**1000 Pounds**													
Corliss 1919	1450	715	LRoie	4	3½x4½	16.9	4	....	....	....	T	FS	Sheb	Dix	Al-Ch	B	Covt	3	Arv	BG	½-Fl	103	Har	31x4*	31x4*	Wohl	.....	80
Dodge	1975	935	Own	4	3⅞x4½	24	3	1/16	L	C	T	FS	Stew	NE	NE	D	Selec	3	Own	SB	Flot	114	Det	33x4	33x4	Own	.....	41
Ellsworth 25A	2100	....	Lyco	4	3¼x5	18	3	1/16	L	T	T	Sp	Cart	Conn	App	C	GLee	3	Stan	BG	Gem	108	Shel	30x3½*	30x3½*	Fos	.....	70
Indiana T	3665	2150	Wau	4	3¾x5¼	22.5	3	1/16	L	C	T	Sp	Strm	Eism	.....	B	Selec	3	Acme	W	½-Fl	135	S-El	34x3½	34x4	Wohl	Wau	65
Moore C	1800	....	GBS	4	3¾x4¼	22.5	3	1/16	....	T	H	FS	KD	Au-L	Au-L	GL	GLee	3	UP	P	Flot	106	¾-El	30x3½	30x3½	Gae	.....	95
Velie	2750	2000	Cont	6	3½x5¼	29.6	3	1/16	L	C	H	FS	Rayf	Will	Remy	B	Selec	3	Spic	B	Own	108	Shel	35x5*	35x5*	Gem	.....	50
Vim 21	1900	945	Own	4	3 x4½	14.4	3	1/16	L	T	MeC	CSp	Zen	Dix	.....	C	Selec	3	Spic	B	Own	108	Shel	31x4*	31x4*	Jac	.....	.....
1200 Pounds															**1200 Pounds**													
Overland	2179	....	Own	4	4⅛x4½	27.2	2	⅜	L	T	C	FS	Till	Conn	Au-L	C	Selec	3	Own	SB	¾-Fl	106	S-El	33x4½*	33x4½*	Own	.....	68.8
1500 Pounds															**1500 Pounds**													
Atlas 19	2320	1135	Lyco	4	3½x5	19.6	3	1/16	L	T	H	Sp	Cart	Remy	Remy	B	Selec	3	Arc	B	Hess	118	Row	32x4*	32x4*	CAS	.....	60
Diehl A	2400	1575	Cont	4	3½x5	19.6	3	....	....	T	H	FS	Zen	Bosch	.....	B	Durst	3	K-B	I	Torb	115	Mar	34x4½*	35x5*	Jac	.....	90
Dispatch G	2200	1200	Wis	4	3¾x5	22.5	3	1/16	L	T	C	Fo	Rayf	Bosch	USL	O	Own	4	Bld	I	Dead	120	Tut	34x4*	34x4*	W	.....	50
G. M. C. 16	2760	1495	Cont	4	3¾x5	22.5	3	1/16	L	C	MeC	FS	Mar	Eism	.....	D	Selec	3	UM	B	WM	132	Det	35x5*	35x5*	Jac	Mon	67
Grant 12	2300	1125	H-Sp	4	3¼x5	16.9	3	¼	L	C	Fed	FS	Cart	Spld	Bij	B	GLee	3	Arv	I	Torb	115	Per	32x4*	32x4*	Dit	.....	65
International H	2800	1550	Own	4	3½x5¼	19.6	3	1/16	L	C	T	FS	Holl	Bosch	Own	D	Own	3	Own	I	Own	115	.....	36x3	36x3½	Ross	Own	50
Old Hickory M	2100	995	Lyco	4	3¼x5	16.9	3	1/16	L	C	C	Sp	Cart	Cov	Dyn	C	Selec	3	Own	B	⅛-Fl	112	.....	33x4*	33x4*	W	.....	60
Reo F	2525	1250	Own	4	4⅛x4½	27.2	3	1/16	L	C	Own	Sp	John	Remy	Remy	O	Own	3	Own	B	Own	128	Penn	34x4½*	34x4½*	Own	.....	62½
Shaw M-2	....	1650	Cont	4	3¾x5	22.4	3	1/16	L	T	T	FS	Zen	Bosch	.....	L	B-Li	3	Spic	BG	Timk	116	Per	32x4*	32x4*	Gem	.....	65
Stewart 6	1750	1050	LRoi	4	3⅛x4½	15.6	3	1/16	R	T	C	FS	Zen	Eism	.....	D	MM	3	Hart	I	IC	110	Det	33x4*	33x4*	CAS	.....	66¾
Texan Cx 36	....	....	GBS	4	3¾x4½	22.5	3	1/16	L	T	H	FS	Mill	Delc	Au-L	D	GLee	3	UP	B	Flot	115	.....	33x4	34x4	.....	.....	.....
Vim 26	2450	1200	Own	4	3 x4½	14.4	3	1/16	L	T	MeC	CSp	Zen	Dix	.....	C	Selec	3	Spic	B	Own	127	Shel	32x4½*	32x4½*	Jac	.....	.....
White G B B E	2960	2300	Own	4	3¾x5⅛	22.5	3	....	L	C	C	FS	Own	Mag	.....	D	Selec	4	Own	B	Own	133	.....	34x4½*	34x4½*	Own	.....	.....
1 Ton															**1 Ton**													
Acason R	3650	....	Wau	4	3¾x5¼	22.5	3	¼	L	P	C	Sp	Sheb	Eism	.....	F	Full	3	Bld	W	Timk	142	Det	36x3½	36x5	Ross	Wau	73
Acme B	3376	1950	Cont	4	3¾x5	22.5	3	1/16	L	T	GO	FS	Rayf	Eism	G&D	B	Cott	3	Bld	W	Timk	130	Det	34x3½	34x5	Ross	Dup	80
All-American A-A	2600	1295	H-Sp	4	3¼x5	16.9	3	1/16	L	T	Stan	FS	Strm	Dix	.....	B	GLee	3	UP	I	Torb	130	Det	33x4*	32x4	Ross	.....	75
Beck-Hawkeye A	2800	1550	Cont	4	3½x5	....	....	....	....	T	H	Sp	Strm	Bosch	.....	F	Full	3	Bld	I	½-Fl	124	Hig	34x3	34x4	Lav	Pier	75
Bessemer G	2900	1575	Cont	4	3½x5	19.6	3	1/16	L	T	C	FS	Zen	Bosch	.....	F	Full	3	Arv	I	Torb	124	Per	34x3½	34x4	Ross	.....	57
Briscoe T-34	....	....	Own	4	3⅜x5	18.9	3	1/16	L	T	C	FS	Buick	Bat	Au-L	C	Own	3	UM	.....	Russ	121	.....	33x4	34x3½	.....	.....	.....
Chevrolet T	2840	1325	Own	4	3 11/16x5¼	22.5	3	1/16	O	T	C	FS	Zen	Remy	Au-L	C	Warn	3	Arv	W	½-Fl	125	Hess	31x4	31x4	Warn	Mon	.....
Columbia F	2800	1750	Cont	4	3¾x5	22.5	3	1/16	L	T	T	FS	Shk	Dix	.....	B	Covt	3	Spic	I	Russ	126	Per	34x3½	34x4	Own	Pier	70
Clydesdale 37	3400	....	Cont	4	3¾x5	22.5	3	1/16	R	T	T	Sp	Zen	Bosch	.....	L	B-Li	3	Spic	W	Timk	144	Stan	34x3½	34x5	Ross	Own	.....
Commerce E Ch	2900	1500	Cont	4	3¾x5	22.5	3	1/16	L	T	L	Sp	Zen	Eism	Imp	C	Selec	3	Spic	I	Torb	126	Det	34x3	34x4	Jac	.....	80
Conestoga-20	3300	1850	Cont	4	3½x5	19.6	3	1/16	L	T	EM	Sp	Zen	Bosch	.....	F	Full	3	.....	W	Wis	118	S-El	34x3½	34x5	Ross	.....	.....
Corbitt E	3050	2150	Cont	4	3¾x5⅛	22.5	4	1/16	L	C	Idl	Sp	Strm	Eism	G&D	D	Covt	3	.....	W	Shel	130	Shel	34x3½	34x4	Lav	Pier	80
Dart E	3200	2100	Buda	4	3¾x5½	22.5	3	¼	L	C	T	Sp	Zen	Eism	.....	F	Full	3	Arv	W	Timk	130	Per	34x3½	34x5	Ross	.....	80
Day-Elder A	3000	1775	Cont	4	3½x5	19.6	3	1/16	L	T	Bus	FS	Zen	Berl	.....	D	Covt	3	Hart	W	Wis	128	Shel	34x3	34x4	Ross	.....	70
Dearborn A	2100	1175	GBS	4	3¾x4¼	22.5	3	1/16	L	T	H	Sp	Strm	Dix	.....	GB	GLee	3	Arv	Ch	CC	125	C-C	32x3½	30x3½*	Dit	.....	90
Denby 12	2770	1650	Cont	4	3½x5	19.6	3	1/16	R	L	T	Sp	Strm	Eism	.....	F	Full	3	UP	I	Russ	124	Det	34x3	34x4	Ross	Mon	73
Diamond T-J 5	3050	2125	Cont	4	3½x5	19.6	3	1/16	L	T	T	FS	Strm	Bosch	.....	L	B-Li	3	Spic	W	Timk	126	Math	36x3	36x4	Gem	Pier	.....
Famous B-10	3000	1690	Cont	4	3½x5	19.6	3	1/16	L	T	T	Sp	Strm	Eism	.....	F	Full	3	Bear	I	Cl	120	Det	36x3½	36x4	Ross	Mon	75
Federal S	3900	....	Cont	4	4¾x5⅛	22.5	4	1/16	L	T	T	FS	Zen	Eism	.....	B	Own	3	Spic	W	Timk	132	Math	34x3	34x4	Gem	Mon	75
Ford T	1450	550	Own	4	3¾x4	22.5	3	¼	L	L	T	SG	Holl	Mag	.....	D	Plan	2	.....	W	½-Fl	124	.....	30x3*	32x3½	.....	.....	.....
Garford 75 C	3900	2500	Buda	4	3¾x5½	22.5	3	1/16	L	C	T	Sp	Rayf	Spld	.....	L	B-Li	3	Spic	W	Timk	128	Per	34x4½*	36x4	Ross	Simp	.....
Gary F	3200	....	Cont	4	3¾x5	22.5	3	1/16	L	T	T	Sp	Strm	Eism	.....	F	Full	3	Hart	W	Shel	130	Tut	36x3½	36x4	Ross	Pier	.....

G. C. M. Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
1 Ton—Continued																												
Giant 15	2950	1850	Cont	4	3½x5	19.6	3	¼	L	T	Idl	FS	Sheb	Eism	.....	W	Warn	3	Spic	W	Timk	138	Math	34x3½	34x5	Jac	.....	94
G. M. C. 21	3794	2025	Cont	4	3¾x5	22.5	3	¼	L	C	McC	FS	Mar	Eism	.....	D	Selec	3	UM	W	Timk	136	Det	34x3½	34x5	Lav	Mon	69
Hahn G	3600	....	Cont	4	3½x5	19.6	3	¼	L	C	Idl	Fo	Strm	Mag	.....	D	Det	3	Spic	I	Torb	130	Del	34x3	34x4	Lay	.....	65
Hahn C	4200	....	Cont	4	4 1/8x5¼	30	4	¼	L	T	Own	Fo	Strm	Bosch	.....	D	B-Li	3	Spic	W	Timk	136	Del	36x3½	36x5	Ross	Pier	65
Higrade A 18	2900	2100	Cont	4	3½x5	19.6	3	¼	L	T	Per	FS	Zen	Sim	L-N	F	Full	3	Bld	W	Shel	115	Per	35x5	35x5	Lav	Dup	66
Hoover 15-B	2425	1435	Cont	4	3½x5	19.6	3	¼	L	T	Can	Fo	Sheb	Dix	.....	F	Full	3	Acme	W	Shel	120	Shel	34x3	34x4	Lav	.....	80
Independent B	2700	1550	Cont	4	3½x5	19.6	3	...	L	C	T	FS	Strm	Bosch	.....	.....	Full	3	Bld	I	Dead	132	Gar	33x3	33x4	Lav	.....	70
International F	3000	1850	Own	4	3½x5¼	19.6	3	¼	L	C	T	FS	Holl	Bosch	Own	D	Own	3	Own	I	Own	128	.....	36x3½	36x4	Ross	Own	50
Jones 31 A	3400	1395	Cont	4	3½x5	19.6	3	¼	L	C	T	FS	John	At-K	.....	C	Selec	3	Own	W	½-Fl	124	Shel	32x3	32x4	Own	.....	80
Maxwell	2385	1085	Own	4	3 5/8x4½	21.3	3	¼	L	T	C	Sp	Strm	Eism	.....	F	Selec	3	Spic	W	Timk	130	Tut	34x3½	34x5	Ross	Mon	50
Menominee-HT	....	1890	Cont	4	3¾x5	22.5	3	¼	L	T	C	FS	Zen	Swis	.....	D	MM	3	UM	W	Chic	130	C-C	34x3½	34x4	CAS	.....	75
Myers 60	2850	1545	Lyco	4	3½x5	19.6	3	¼	L	T	C	Sp	Strm	Conn	Au-L	F	Full	3	UP	.....	Cl	132	.....	32x3½	32x4	Gem	.....	65
Napoleon 9	3400	1285	Gray	4	3½x5	19.6	3	¼	O	L	T	Sp	Strm	Eism	.....	B	Selec	3	Own	I	Celf	130	Stan	34x3	34x4	Jac	Simp	67.5
Nash 2018	3400	1650	Own	4	3¾x5¼	22.5	4	¼	L	C	T	Fo	Strm	Eism	.....	W	B-Li	3	Own	W	Timk	...	Tut	36x3	36x4	Lav	Mon	80
Nelson & Le Moon F1	2900	2000	Cont	4	3¾x5¼	22.5	3	¼	L	C	T	Sp	Strm	Bosch	W	L	B-Li	3	Own	W	Timk	130	C-C	34x4*	34x4	CAS	.....	90
Norwalk	1650	1595	Lyco	4	3½x5	28.5	3	¼	L	C	T	Sp	Cart	Dele	Dyn	D	MM	3	UM	W	½-Fl	130	C-C	34x4*	34x4	Gem	Pier	70
Ogden A1	3400	2095	Cont	4	3¾x5	22.5	3	¼	L	T	T	FS	Rayf	Bosch	.....	B	B-Li	3	Acme	W	Timk	136	Tut	36x3	36x4	W	Pier	75
Old Hickory	3470	....	Cont	4	4¾x5	22.5	3	¼	L	T	L	Fo	Strm	Mag	.....	B	Selec	3	Bld	W	½-Fl	135	S-El	36x3½	36x4	W	Pier	82
Oneida A	4320	2290	Cont	4	3¾x5¼	22.5	3	¼	L	C	CAS	FS	Strm	Bosch	Opt	M	Cott	3	Spic	W	Timk	144	Math	36x3½	36x5	Ross	Pier	82
Panhard	2810	1195	Gray	4	3½x5	19.6	3	¼	O	C	CAS	Sp	Strm	Au-L	Opt	D	Full	3	UP	I	Torb	130	Det	32x3½*	32x3½	Lav	.....	80
Piedmont O	....	....	Lyco	4	3½x5	19.6	3	¼	L	T	Stan	Fo	Cart	Bat	Dyn	B	Selec	3	Hart	W	Timk	130	S-El	33x4*	33x4	.....	.....	.....
Rainier R-7	2800	1550	Cont	4	3½x5	19.6	3	¼	L	T	Har	FS	Zen	Sim	.....	L	B-Li	3	Hart	W	½-Fl	125	Per	34x4	34x4	Lav	Mon	80
Republic 10	2850	1535	Cont	4	3¾x5	22.5	3	¼	L	T	C	FS	Strm	Eism	.....	D	Full	3	Arv	I	Torb	124	Opt	.....	.....	Jac	Rug	.....
Royal	....	2400	Wis	4	3¼x5	16.9	....	....	....	C	T	....	Strm	Bosch	Opt	B	Own	3	Own	W	Timk	128	Mer	34x4	34x5	Ross	Mon	.....
Sandow G	3000	1795	Cont	4	3½x5	19.6	3	¼	L	C	T	FS	Strm	Eism	.....	D	Full	3	UM	W	Shel	120	GC	34x3½	34x5	Ross	.....	66
Service 220	3470	2100	Buda	4	3½x5½	19.6	3	¼	L	T	T	FS	Strm	Eism	.....	D	Selec	3	Arv	W	Timk	137	.....	34x3½	34x5	Ross	.....	64
Signal F	4395	2400	Cont	4	4 1/8x5¼	27.2	3	¼	L	C	McC	FS	Strm	Eism	.....	L	B-Li	4	Spic	W	Timk	144	Per	34x3½	36x5	Lav	Pier	80
Standard 56	....	....	Cont	4	4¾x5	22.5	3	¼	L	C	T	FS	Strm	Eism	.....	D	.....	3	Spic	W	Timk	134	.....	34x3	34x4	Ross	Mon	75
Stewart 8	2820	1575	Cont	4	3½x5	19.6	3	¼	R	T	T	FS	Zen	Eism	.....	B	Durst	3	Hart	I	IG	130	Det	34x3½	34x4	Gem	.....	70
Superior A	2680	1600	Gray	4	3½x5	19.6	3	¼	L	T	Idl	.....	Strm	Eism	.....	F	Full	3	K-B	I	Torb	124	Tut	34x4½*	35x5*	CAS	Mon	.....
Vim 25	2800	2195	Her	4	3¾x5½	22.5	3	¼	L	C	McC	C	Zen	Dix	.....	D	Selec	3	Spic	W	Shel	120	Shel	35x5*	35x5*	Jac	.....	.....
Wilson F	3150	1750	Cont	4	3½x5	19.6	3	¼	L	T	H	FS	Strm	Eism	.....	D	Covt	3	Bld	W	Timk	124	Shel	35x5*	35x5*	Ross	Pier	75
1¼ Ton																												
Collier 16	2600	1375	Lyco	4	3½x5	19.6	3	¼	L	T	Jms	Sp	Zen	Conn	Au-L	B	GLee	3	Ther	B	Sals	128	Ster	33x4½	32x4½	Die	.....	50
Commerce EP	3200	1895	Cont	4	3¾x5	22.5	3	¼	L	T	L	Sp	Zen	Eism	Imp	C	Selec	3	Spic	I	Torb	134	Det	36x6*	36x6*	Jac	.....	80
Koehler K	3000	1450	Own	4	3½x5	19.6	3	¼	L	T	T	FS	Strm	Eism	.....	MM	MM	3	K-B	I	Torb	129	.....	34x3	34x4	Own	Mon	65
Sandow C G	3300	2090	Cont	4	3½x5	19.6	3	¼	L	T	T	FS	Strm	Eism	.....	D	Full	3	UM	W	Shel	135	GC	34x3½	34x5	Ross	.....	67
1½ Ton																												
Acason RB	3850	....	Wau	4	4¾x5¼	22.5	3	¼	L	P	Can	Sp	Sheb	Eism	.....	F	Full	3	Bld	W	Timk	144	Det	36x3½	36x6	Ross	Wau	77
Atterbury 7R	4770	2575	Cont	4	4 1/8x5¼	27.2	3	¼	L	C	T	Sp	Zen	Eism	.....	L	B-Li	4	Spic	W	Timk	140	SP	36x3½	36x5	Gem	Mon	96.5
Beck-Hawkeye B	3200	1950	Cont	4	3¾x5	....	....	....	....	T	H	Sp	Strm	Bosch	.....	F	Full	3	Bld	I	½-Fl	144	Hig	34x3½	36x5	Lav	Pier	75
Bessemer H	3500	1945	Cont	4	3¾x5	22.5	3	¼	L	C	C	FS	Zen	Bosch	.....	B	B-Li	3	Arv	I	Torb	144	Per	36x3½	36x5	Ross	.....	63
Bethlehem D	3300	1965	Own	4	3¾x4½	22.5	3	¼	L	T	T	FS	Sheb	Bat	G&D	B	Det	3	UP	I	Russ	136	Shel	34x3½	34x5	Lav	Mon	85
Brinton F	4300	2500	Cont	4	4 1/8x5¼	27.2	3	¼	L	T	T	Fo	Strm	Bosch	.....	D	Selec	3	Spic	W	Flot	150	.....	34x4	34x5	Ross	Pier	.....
Brockway J-2	4000	2450	Cont	4	3¾x5	22.5	3	¼	L	T	Bus	FS	Sheb	Eism	.....	H	B-Li	3	Spic	W	Timk	140	Mer	36x3½	36x5	Gem	Opt	70
Brockway S	3800	2050	Cont	4	4¾x5	36.1	3	¼	L	T	Bus	FS	Sheb	Eism	.....	H	B-Li	3	Spic	W	Shel	140	Mer	36x3½	36x5	Gem	Opt	70
Clydeadale 42	....	....	Cont	4	4¾x5	22.5	3	¼	R	T	T	FS	Zen	Bosch	.....	L	B-Li	3	Spic	W	Timk	146	Stan	36x3½	36x6	Ross	Own	.....
Comet 1½	2898	1750	Lyco	4	3½x5	19.6	4	¼	L	C	T	FS	Cart	Au-L	Dyn	B	Mune	3	UP	W	Stan	130	Mar	34x4*	34x4	CAS	.....	85
Concord A	4200	2550	Buda	4	3¾x5½	22.5	3	¼	L	C	T	Sp	Zen	Eism	.....	L	B-Li	3	Spic	W	Timk	140	Per	36x3½	36x5	Ross	Mon	70
Corbitt D	3890	2400	Cont	4	3¾x5	22.5	3	¼	L	T	Idl	FS	Strm	Eism	G&D	D	Full	3	.....	W	Shel	138	Shel	36x3½	36x5	Ross	Pier	75
Day-Elder B	3300	2075	Cont	4	3¾x5	22.5	3	¼	L	T	Bus	FS	Zen	Berl	.....	D	Covt	3	Hart	W	Wis	144	Shel	34x3½	34x5	Ross	.....	72
Dearborn F	3280	1980	Cont	4	3½x5	19.6	3	¼	L	T	T	Sp	Strm	Bosch	.....	F	Full	3	Arv	W	Stan	126	Tut	34x4	34x5	Lav	.....	80
Defiance B	3200	1795	Cont	4	3¾x5	22.5	3	¼	R	T	Per	FS	Strm	Eism	.....	B	GLee	3	Arv	I	Torb	135	Det	34x3½	34x5	Dit	Mon	85
Diamond T-J4	3700	2550	Cont	4	3¾x5	22.5	3	¼	L	T	T	FS	Strm	Bosch	.....	L	B-Li	3	Spic	W	Timk	127	Math	36x3½	36x5	Gem	Pier	.....
Douglas TA	3100	2000	Buda	4	4 1/8x5½	27.2	3	¼	L	C	T	FS	Sheb	Eism	.....	B	GLee	3	Arv	I	Torb	127	Own	34x3½	34x5	Ross	Pier	65
Famous B-12	3600	2250	Cont	4	3¾x5	22.5	3	¼	L	C	T	Sp	Strm	Eism	.....	F	Full	3	Bear	I	Cl	138	Det	36x3½	36x5	Ross	Mon	75
Federal T	4250	2350	Cont	4	4 1/8x5¼	27.2	3	¼	L	C	GO	FS	Cart	Sim	.....	B	Dur	3	Hart	I	Russ	137	S-El	34x3½	36x5	Gem	Mon	76
Fulton C	3300	2150	H-Sp	4	3¼x5	18.2	3	¼	L	C	T	Sp	Rayf	Spld	.....	L	Own	4	Spic	W	Timk	144	Per	36x3½	36x5	Lav	Simp	68
Garford 66 B	4180	3000	Buda	4	3¾x5½	22.5	3	¼	L	C	T	C	Strm	Eism	.....	F	Full	3	Hart	W	Shel	144	Tut	36x3½	36x5	Ross	Pier	.....
Gary G	4200	....	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Fo	Strm	Bosch	.....	B	Cott	3	Bld	W	Own	142	Tut	36x3½	36x6	Ross	Mon	70
Gersix M	4300	2650	Buda	4	4 x5½	25.6	3	¼	L	P	I	Fo	Strm	Bosch	.....	W	Warn	3	Spic	W	Timk	138	Math	34x3½	34x5	Jac	Pier	94
Giant 14	3600	2250	Cont	4	3½x5	19.6	3	¼	L	C	C	FS	Sheb	Eism	.....	D	Selec	4	UM	W	Timk	130	Det	36x3½	36x5	Lav	Mon	74
G. M. C. 31 A	4110	2395	Cont	4	3¾x5	22.5	3	¼	L	T	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	144	Det	36x3½	36x5	Lav	Mon	74
G. M. C. 31 B	4150	2395	Cont	4	3¾x5	22.5	3	¼	R	T	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	144	Det	36x3½	36x5	Lav	Mon	74
Gramm-Bernstein 15	3700	1895	Cont	4	3¾x5	22.5	3	¼	L	T	T	Sp	Strm	NE	.....	D	Selec	3	Arv	I	Cl	138	.....	36x3½	36x5	Ross	.....	.....
Grant 10	3000	1885	Cont	4	3¾x5	22.5	3	¼	L	T	Fed	FS	Cart	Spld	Remy	B	GLee	3	Arv	I	Torb	124	Per	34x4½*	34x5	Jac	Pier	65
Grant 11	3100	1935	Cont	4	3¾x5	22.5	3	¼	L	T	Fed	FS	Cart	Spld	Remy	B	GLee	3	Arv	I	Torb	140	Per	34x4½*	34x5	Jac	Pier	65
Hahn D	4600	....	Cont	4	4 1/8x5	30	4	¼	L	T	Own	Fo	Strm	Bosch	.....	F	B-Li	3	Spic	W	Timk	142	Del	36x3½	36x6	Ross	Pier	65
Harvey W E A	3850	2350	Buda	4	4 1/8x5½	27.2	4	¼	L	P	.....	Fo	Zen	Bosch	.....	F	Full	3	Spic	W	Shel	128	Shel	34x3½	34x5	Ross	Mon	60

G. C. M. Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr.Cent of Weight on Rear Wheels
1½ Ton—Continued																												
Hawkeye K	3400	1900	Buda	4	3¾x5½	22.5	3	1/16	L	C	C	FS	Zen	Eism	.....	F	Full	3	Hart	I	Cl	149	Det	34x3½	34x5	Gem	Simp	70
Huffman B	3200	1695	Cont	4	3¾x5	22.5	....	1/16	....	T	C	Fo	Zen	Dix	Imp	F	Full	3	.....	H	Stan	140	.....	34x3½	34x5	Lav	.....	85
Huffman C	3200	1495	Cont	4	3¾x5	22.5	3	1/16	....	T	C	Fo	Zen	Dix	Imp	F	Full	3	.....	H	Torb	140	Per	34x3½	34x5	Lav	.....	85
Independent D	3900	1890	Cont	4	3¾x5	22.5	3	....	L	C	T	FS	Strm	Bosch	.....	.....	Full	3	Bld	I	Dead	135	Gar	34x3½	34x5	Lav	.....	70
Indiana Q	4600	2600	Rut	4	4⅛x5½	27.2	3	¼	L	C	T	Fo	Strm	Eism	.....	B	Selec	4	Acme	W	½-Fl	144	S-El	36x3½	36x5	Wohl	Pier	68½
International K	3400	2200	Own	4	3½x5¼	19.6	3	1/16	L	C	T	FS	Holl	Bosch	Own	D	Own	3	Own	I	Own	128	.....	36x3½	36x5	Ross	Own	50
Kelly-Springfield K 31	4590	2750	Own	4	3¾x5¼	22.5	3	¼	L	C	Fed	Fo	Zen	Eism	.....	C	Covt	3	Own	C	Dead	144	Per	36x3½	36x6	Gem	Own	89
Kelly-Springfield K 32	4685	2750	Own	4	3¾x5¼	22.5	3	¼	L	C	Fed	Fo	Zen	Eism	.....	C	Covt	3	Spic	W	½-Fl	144	Per	36x3½	36x6	Gem	Own	89
Kimball	....	....	Wis	4	4¼x6	25.6	3	¼	L	C	Flex	FS	Mas	Bosch	.....	L	Selec	4	Spic	W	Shel	126	US	36x3½	36x5	Lav	Dup	80
Kissel-Utility	3600	2073	Own	4	3⅞x5½	24.1	3	1/16	L	C	McC	Sp	Strm	Eism	.....	D	Warn	3	Spic	W	Shel	152	Math	36x3½	34x5	Jac	Pier	80
Lane G	3940	2250	Cont	4	3⅜x5⅛	22.5	3	¼	L	T	Hvn	FS	Strm	W	.....	F	Full	3	Acme	W	Wis	140	Kal	34x4	34x5	Ross	Pier	.....
Larabee-Deyo M	3800	2150	Cont	4	3¾x5	22.5	3	1/16	L	T	Bus	Sp	Sheb	Bosch	.....	L	B-Li	3	UM	W	Shel	140	Mer	34x3½	34x5	Ross	Pier	.....
Maccar L	4450	2750	Cont	4	4⅛x5¼	27.2	3	1/16	L	C	Own	FS	Strm	Bosch	.....	L	B-Li	3	Spic	W	Timk	150	Mer	36x4	36x5	Ross	Pier	70
Mack AB	4800	2800	Own	4	4 x5	25.6	3	....	L	C	H	FS	Strm	Dix	.....	D	Selec	4	.....	C	Dead	Op	.....	36x3½†	.....	Own	.....	46
Manly 30	....	2050	Wau	4	3¾x5¼	22.5	3	¼	L	C	T	Sp	Zen	Eism	.....	F	Selec	3	Ther	W	½-Fl	144	Shel	36x4	36x5	Lav	Wau	.....
Master Junior JW	3800	1990	Buda	4	4⅛x5½	27.2	3	1/16	L	C	T	Sp	Mas	Eism	.....	D	Full	3	Arv	W	Timk	142	Det	34x3½	34x5	Ross	McC	78
Master Junior JI	3800	1890	Buda	4	4⅛x5½	27.2	3	1/16	L	C	T	Sp	Mas	Eism	.....	D	Full	3	Arv	IG	Torb	142	Det	34x3½	34x5	Ross	McC	78
Menominee H	....	2475	Cont	4	3¾x5¼	22.5	3	1/16	L	C	C	Sp	Strm	Eism	.....	F	Selec	3	Spic	W	Timk	144	Tut	36x3½	36x5	Ross	Mon	80
Moreland 19B	4150	2650	Cont	4	4⅛x5¼	27.2	3	1/16	L	C	C	Fo	Mill	Dix	.....	D	Selec	4	Ther	W	Timk	126	US	36x3½	36x5	Ross	.....	.....
Myers 80	3000	1875	Lyco	4	3½x5	19.6	3	1/16	L	T	C	Sp	Zen	Swis	.....	B	GLee	3	UM	W	Chic	130	C-C	34x3½	34x5	CAS	.....	75
Napoleon 11	3450	1485	Gray	4	3½x5	19.6	3	¼	O	T	T	Sp	Strm	Conn	Au-L	F	Full	3	UP	I	IG	132	S-El	35x5	35x5	Lav	.....	65
Nelson & Le Moon F1½	3400	2425	Cont	4	3¾x5¼	22.5	3	1/16	L	C	T	Sp	Strm	Bosch	West	L	B-Li	3	Own	W	Timk	...	Tut	36x3½	36x5	Lav	Mon	80
Noble NW1	3950	2450	Cont	4	3¾x5	22.5	3	1/16	R	T	T	FS	Strm	Eism	G&D	F	Full	3	Acme	W	Shel	144	Kal	36x3½	36x5	Ross	.....	80
Norwalk	1850	1925	Lyco	4	3½x5	19.6	3	1/16	L	T	C	FS	Cart	Swis	.....	B	GLee	3	UM	W	Stan	130	C-C	34x3½	34x5	CAS	.....	75
O. K. 1½ T	3850	2450	Rut	4	4⅛x5½	27.2	3	1/16	L	C	C	FS	Cart	Dix	.....	D	Selec	3	Hart	W	Stan	146	Tut	36x4	36x5	Ross	Pier	85
Old Reliable WA	4150	2350	Wis	4	4 x6	27.2	3	1/16	L	C	L	FS	Strm	Bosch	Opt	M	B-Li	3	Spic	W	Shel	130	Shel	34x3½	36x6	Ross	Pier	82
Oneida B	5280	2650	Cont	4	4⅛x5¼	27.2	3	¼	L	C	C	Fo	Stan	Bosch	Opt	M	Cott	3	Spic	W	Timk	144	Math	36x3½	36x6	Ross	Pier	.....
Packard 1½ E	4640	3000	Own	4	4 x5½	25.6	3	¼	L	C	C	Fo	Own	Dix	Bij	D	Selec	4	Spic	W	Flot	144	.....	34x3½	34x3½†	Own	Own	45.9
Panhard B	3010	1395	Gray	4	3½x5	19.6	3	1/16	O	C	CAS	Sp	Strm	Au-L	Opt	D	Full	3	UP	I	Torb	130	Det	32x3½	32x4	Lav	.....	80
Patriot Lincoln	3400	2150	Cont	4	3¾x5	22.5	3	1/16	L	T	Own	FS	Strm	Bosch	.....	D	Selec	3	Ther	H	IG	135	S-El	34x3½	34x5	W	Pier	75
Piedmont	....	....	Lyco	4	3½x5	19.6	3	1/16	L	T	Stan	Fo	Cart	Bat	Dyn	B	Selec	3	Hart	W	Emp	140	S-El	.....	.....	.....	.....	.....
Rainier R-6	3100	1890	Cont	4	3½x5	19.6	3	1/16	L	T	Har	FS	Zen	Sim	.....	L	B-Li	3	Hart	W	½-Fl	133	Per	34x3	34x4	Ross	Mon	80
Reliance	4200	2500	Buda	4	4⅛x5½	27.2	3	¼	L	P	T	FS	Strm	Bosch	.....	F	Full	3	Hart	E	Dead	150	Shel	36x3½	36x5	Ross	Pier	.....
Republic 11X	3200	1885	Cont	4	3¾x5	22.5	3	1/16	L	T	C	FS	Strm	Eism	.....	D	Full	3	Arv	I	Torb	144	Opt	.....	.....	Jac	Rug	.....
Royal	....	2800	Wis	4	3¾x5	22.5	....	....	....	C	T	....	Strm	Bosch	Opt	D	Own	...	Own	W	Timk	128	Mer	34x4	34x5	Ross	Mon	.....
Sandow H 1-1½	3700	2375	Cont	4	3½x5	19.6	3	1/16	L	T	T	FS	Strm	Eism	.....	D	Full	3	K-B	W	Timk	138	GC	34x4	34x6	Ross	.....	68
Schwartz	3500	2175	Cont	4	3¾x5	22.5	3	1/16	L	T	Fed	FS	Strm	Bosch	.....	L	B-Li	3	Hart	I	Torb	140	.....	34x3½	34x5	Ross	Pier	.....
Selden 1½A	3400	2185	Cont	4	3¾x5	22.5	3	1/16	L	T	Bus	FS	Strm	Bosch	.....	L	B-Li	3	Spic	W	Timk	140	Per	34x3½	34x5	Lav	Pier	70
Signal H	4675	2700	Cont	4	4⅛x5¼	27.2	3	1/16	L	C	McC	FS	Strm	Eism	.....	L	B-Li	4	Spic	W	Timk	144	Per	34x4	36x6	Lav	Pier	80
Stewart 9	3440	1975	Cont	4	3¾x5	22.5	3	1/16	R	T	T	FS	Zen	Eism	.....	F	Full	3	Hart	I	IG	140	Det	34x3½	34x4†	Gem	.....	70
Sullivan F	3500	2350	Buda	4	3¾x4½	22.5	3	1/16	L	T	V	Fo	Strm	Bosch	.....	H	Covt	3	Hart	W	Timk	129	Mer	36x3½	36x5	Ross	.....	60
Texan TK	3200	1500	Lyco	4	3½x5	19.6	3	1/16	L	T	H	FS	Cart	Delc	.....	B	GLee	3	UP	W	½-Fl	130	.....	34x4	34x4	CAS	.....	60
Tiffin GW	3750	2125	Cont	4	3¾x5¼	22.5	3	1/16	L	T	V	FS	Rayf	Bosch	.....	H	Covt	3	Hart	W	Timk	129	Mer	36x3½	36x5	Ross	Dup	.....
Transport 30	3450	1950	Cont	4	3¾x5	22.5	3	1/16	L	C	C	FS	Strm	Eism	.....	F	Full	3	Arv	I	Cl	140	Det	36x3½	36x5	Jac	Simp	70
Triangle A	3750	2185	Wau	4	3¾x5¼	22.5	3	....	L	C	Per	Sp	Strm	Eism	.....	F	Full	3	UP	I	Cl	144	Det	34x3½	34x6	Gem	Wau	60
United AX	....	....	Buda	4	4¾x5½	22.5	4	....	L	C	V	Fo	.....	Eism	Opt	L	B-Li	...	Bld	W	Shel	Op	.....	36x3½	36x6	Ross	Simp	80
U. S. W.	3800	1995	Cont	4	3¾x5	22.5	3	1/16	R	C	T	Sp	Strm	Eism	Opt	D	B-Li	3	Opt	I	Cl	144	Shel	36x3½	36x5	Lav	Mon	80
White Hickory H	3975	2400	Cont	4	3¾x5	22.5	3	1/16	L	C	C	FS	Strm	Eism	.....	F	Full	3	Arv	W	Timk	144	Shel	36x3½	36x5	Ross	Pier	76
Wichita L	3600	2350	Own	4	3½x5	19.6	3	1/16	L	T	Per	Sp	Strm	.....	.....	C	Covt	3	Own	W	Shel	144	.....	36x3½	36x5	Ross	.....	.....
Winther 39	3700	2100	Wis	4	3¾x5	22.5	3	1/16	L	P	T	G	Strm	Eism	Bij	F	B-Li	3	Arv	W	½-Fl	115	Per	34x3½	34x5	Lav	.....	70
Winther 439	4100	2100	Gray	4	3½x5	....	3	¼	H	T	T	G	Strm	Eism	.....	F	Full	3	Arv	I	Cl	132	Har	34x4	34x6	Lav	.....	70
Wolverine C	3400	2250	Cont	4	3¾x5	22.5	....	....	L	T	L	FS	Strm	Opt	G&D	F	Selec	3	UP	I	Russ	140	Tut	34x3½	34x5	Gem	Mon	77
2 Ton																												
Acason H	4354	....	Wau	4	4¼x5¾	28.9	3	¼	L	GD	Can	Sp	Sheb	Eism	.....	M	Munc	4	Bld	W	Timk	150	Det	36x4	36x7	Ross	Wau	76
Acme A	4450	2750	Cont	4	4⅛x5¼	27.2	3	1/16	L	C	GO	FS	Rayf	Eism	.....	B	Cott	3	Bld	W	Timk	148	Det	36x4	36x7	Ross	Dup	80
Armleder HW	4550	....	Cont	4	4⅛x5¼	27.2	3	1/16	L	C	T	Fo	Sheb	Bosch	.....	D	B-Li	3	Opt	W	Timk	Op	Math	36x4	36x7	Ross	Mon	80
Atterbury 7C	5325	3075	Cont	4	4⅛x5¼	27.2	3	¼	L	C	T	Sp	Zen	Eism	.....	L	B-Li	4	Spic	W	Timk	153	SP	36x4	36x4†	Gem	Pier	92.5
Autocar F	3430	2050	Own	2	4¾x4½	18	4	1/16	L	C	V	Sp	Strm	Mag	.....	D	Prog	3	.....	DR	Flot	97	.....	34x4	34x5	Own	.....	.....
Autocar G	3690	2150	Own	2	4¾x4½	18	4	1/16	L	C	V	Sp	Strm	Mag	.....	D	Prog	3	.....	DR	Flot	120	.....	34x4	34x5	Own	.....	.....
Available H-2	4500	....	Cont	4	4⅛x5¼	27.2	3	1/16	L	C	T	Sp	Strm	Bosch	.....	B	B-Li	4	Spic	W	Timk	148	Tut	36x4	36x7	Lav	Pier	.....
Beck-Hawkeye C	4000	2350	Cont	4	4⅛x5¼	....	....	....	P	H	....	Fo	Strm	Bosch	.....	F	Full	3	Bld	I	½-Fl	144	Hig	36x3½	36x6	Lav	Pier	70
Brockway K-3	4700	2850	Cont	4	4⅛x5¼	27.2	3	1/16	L	C	Bus	FS	Sheb	Eism	.....	H	B-Li	3	Spic	W	Timk	Op	Mer	36x4	36x7	Gem	Mon	80
Clydesdale 65	4850	....	Cont	4	4⅛x5¼	27.2	3	1/16	L	C	T	Sp	Zen	Bosch	.....	L	B-Li	4	Spic	W	Timk	163	Stan	36x4	36x4†	Ross	Own	73
Columbia E	4100	2350	Cont	4	4⅛x5¼	27.2	3	1/16	L	C	T	FS	Shk	Dix	.....	C	Covt	3	Spic	I	Russ	144	Per	36x4	36x6	Own	Pier	80
Conestoga 30	4000	2550	Cont	4	3¾x5	22.5	3	1/16	L	T	EM	Sp	Zen	Bosch	.....	F	Full	3	.....	W	Wis	136	S-El	36x4	36x4	Ross	.....	80
Corbitt C	4850	3000	Cont	4	4⅛x5¼	27.2	3	1/16	L	C	T	Sp	Strm	Eism	G&D	L	B-Li	3	.....	W	Shel	148	Shel	36x4	36x4†	Ross	.....	.....
Dart CC4	4785	2950	Buda	4	4⅛x5½	28.9	3	¼	L	C	C	Fo	Zen	Eism	.....	F	Full	4	Spic	W	Timk	150	Per	36x4	36x7	Ross	Simp	80
Day-Elder D	3650	2450	Cont	4	4⅛x5¼	27.2	3	1/16	L	P	Bus	FS	Zen	Berl	.....	D	Covt	3	Hart	W	Wis	144	Shel	36x4	36x6	Ross	.....	72
Dearborn B	3000	1750	Buda	4	3½x5⅛	28.9	3	....	L	T	H	Sp	Strm	Bosch	.....	B	G-Lee	3	Arv	Ch	C-C	133	C-C	32x4*	34x5	Dit	.....	90
Defiance C	3500	1995	Cont	4	3¾x5	22.5	3	1/16	R	T	Per	FS	Strm	Eism	.....	B	G-Lee	3	Arv	I	Torb	135	Det	34x3½	34x6	Dit	Mon	85
DeKalb E2	4150	2100	Cont	4	4⅛x5¼	27.2	3	1/16	L	T	T	Fo	Mas	Eism	.....	F	Full	3	K-B	W	Timk	146	Math	34x3½	36x5	Ross	.....	68
Denby 13	3800	2350	Cont	4	3¾x5	22.5	3	1/16	R	P	T	L	Sp	Strm	Eism	.....	D	Det	3	UP	I	Russ	144	Det	36x3½	36x6	Gem	Mon	75½
Diamond T-J3	4175	2925	Cont	4	4⅛x5¼	27.2	3	1/16	L	C	T	FS	Strm	Bosch	.....	L	B-Li	3	Spic	W	Timk	154	Math	36x4	36x7	Gem	Pier	.....

2 Ton—Continued

G. C. M. Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
Dorris K4	5200	2985	Own	4	4¼x5½	28.9	3	¼	I	C	T	Fo	Strm	Bosch	West	D	Warn	4	Spic	W	Timk	162	Row	36x4	36x7	Ross	Own	70
Fageol	4600	3300	Wau	4	4½x5¾	28.9	3	¼	L	C	Flex	Sp	Zen	Dix	.....	B	Selec	4	Spic	W	Timk	144	Math	34x4	36x7	Ross	Wau	80
Fargo P	3900	2200	Cont	4	3¾x5	22.5	3	5/32	L	C	Own	Sp	Rayf	Bosch	.....	D	Full	3	Spic	I	Russ	144	Shel	36x4	36x6	Jac	.....	80
Federal U	4800	2600	Cont	4	4⅛x5¼	27.2	3	5/32	L	C	T	Sp	Zen	Eism	.....	B	Own	4	Spic	W	Timk	156	Math	36x4	36x7	Gem	Mon	77
Gabriel E	5000	3250	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Fo	Rayf	Bosch	L-N	B	B-Li	4	Spic	W	Timk	156	Mer	35x5	36x7	Gem	Dup	65
Garford 70B	4590	3300	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Sp	Rayf	Spld	.....	L	Selec	4	Spic	W	Timk	144	Per	36x4	36x7	Ross	Simp	.....
Gary H	4500	....	Buda	4	4¼x5½	28.9	3	¼	L	P	T	C	Strm	Eism	.....	F	Full	3	Hart	W	Shel	156	Tut	36x4	36x6	Ross	Simp	.....
Giant 16	4500	2850	Cont	4	4½x5¼	27.2	3	5/32	L	C	C	FS	Sheb	Eism	.....	W	Warn	3	Spic	W	Timk	144	Math	36x4	36x7	Jac	.....	90
G. M. C. 41A	4525	2725	Cont	4	4½x5¼	27.2	3	5/32	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	144	Det	36x4	36x4†	Lay	Mon	74
G. M. C. 41B	4580	2725	Cont	4	4½x5½	27.2	3	5/32	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	158	Det	36x4	36x4†	Lav	Mon	74
Gramm-Bernstein 20	5000	2700	Cont	4	4½x5¼	27.2	3	5/32	R	C	T	Sp	Strm	NE	.....	D	Selec	3	Arv	W	Shel	144	.....	36x3½	36x7	Ross	Pier	72.2
Grant 15	3400	2150	Cont	4	3¾x5	22.5	3	¼	L	T	Fed	FS	Cart	Spld	Remy	B	GLee	3	Arv	I	Torb	124	Per	34x4	34x6	Jac	Pier	65
Grant 16	3500	2250	Cont	4	3¾x5	22.5	3	¼	L	T	Fed	FS	Cart	Spld	Remy	B	GLee	3	Arv	I	Torb	140	Per	34x4	34x6	Jac	Pier	65
Hahn H	4800	....	Cont	4	4½x5¼	30	3	5/32	L	P	Own	Fo	Strm	Mag	.....	D	B-Li	3	Spic	I	Torb	136	Del	34x3½	34x6	Ross	Pier	.....
Hahn E	5000	....	Cont	4	4½x5½	40	4	¼	L	C	Own	Fo	Strm	Bosch	.....	D	B-Li	3	Spic	W	Timk	Op	Del	36x4	36x7	Ross	Pier	.....
Hall	4560	2675	Cont	4	4⅛x5¼	27.2	....	....	L	P	H	FS	Zen	Bosch	.....	L	B-Li	...	K-B	W	Timk	Op	Det	36x4	36x4†	Gem	Dup	.....
Hawkeye M	4000	2650	Buda	4	4¼x5½	28.9	3	5/32	L	C	C	FS	Zen	Eism	.....	F	Full	4	Hart	I	Cl	148	Det	36x4	36x6	Gem	Simp	70
Hendrickson I	....	3000	Buda	4	4¼x5¾	28.9	3	¼	L	C	T	Fo	Strm	Dix	.....	D	Full	4	Ther	W	Timk	Op	Tut	36x4	36x7	Ross	Pier	80
Hewitt-Ludlow	4200	2800	Buda	4	4½x5½	27.2	....	....	....	....	T	....	Strm	Bosch	.....	B	Cott	...	Spic	.....	Wis	130	.....	36x4	36x6	Lav	.....	.....
Hurlburt	5600	3500	Buda	4	4¼x5½	28.9	3	5/32	L	C	T	FS	Flch	Eism	.....	D	B-Li	3	Spic	W	Flot	148	.....	36x4	36x4†	Ross	Dup	.....
Independent C	4400	2290	Cont	4	4½x5½	27.8	3	....	L	C	T	FS	Strm	Bosch	.....	....	Full	3	Bld	I	Dead	146	Gar	34x4	34x6	Lav	.....	70
Indiana D	4960	2800	Rut	4	4⅛x5½	27.2	3	¼	L	C	T	Fo	Strm	Eism	.....	B	Selec	4	Acme	W	½-Fl	150	S-El	36x4	36x7	Wobl	Pier	71½
International G	4010	2600	Own	4	4 x5	25.6	4	¼	O	T	T	FS	Ens	Dix	Own	D	Own	3	Own	I	Own	138	.....	36x4	36x6	Ross	Own	50
Jumbo C	4700	2600	Buda	4	4¼x5½	28.9	3	¼	L	C	GO	Fo	Zen	Eism	.....	F	Full	3	Arv	I	Cl	108	Det	36x4	36x7	Jac	Dup	60
Jumbo D	4800	2500	Buda	4	4¼x5½	28.9	3	¼	L	C	GO	Fo	Zen	Eism	.....	F	Full	3	Arv	I	Cl	152	Det	36x4	36x7	Jac	Dup	60
Jumbo E	4900	2575	Buda	4	4¼x5½	28.9	3	¼	L	C	GO	Fo	Zen	Eism	.....	F	Full	3	Arv	I	Cl	168	Det	36x4	36x7	Jac	Dup	60
Kissel-Freighter	4700	2832	Own	4	4¼x5½	28.9	3	5/32	L	C	McC	Sp	Strm	Eism	.....	W	Warn	4	Spic	W	Timk	168	Math	36x6	36x7	Lav	Pier	80
Lane H	5230	2975	Cont	6	3½x5¼	29.7	3	¼	L	P	Hvn	FS	Strm	Eism	Dyn	B	Full	3	Acme	W	Timk	160	Kal	34x5	36x7	Ross	Pier	.....
Lange B	5200	2900	Cont	4	4⅛x5¼	27.8	3	....	L	T	H	Sp	Strm	Bosch	.....	D	Cott	3	Evn	C	Own	136	.....	36x4	36x6	Gem	Pier	90
Luverne BBL	....	1650	GBS	4	3¾x4¼	....	3	5/32	L	C	C	Sp	Sheb	Bosch	Dyn	D	Det	3	UP	I	Flot	136	Har	34x4*	34x5	Lav	.....	.....
Mack AB	4900	3000	Own	4	4 x5	25.6	3	....	L	C	H	FS	Strm	Dix	.....	D	Selec	4	.....	W	Dead	Op	.....	36x6	34x4†	.....	Own	47
Manly	....	2350	Wau	4	3¾x5¼	22.5	3	¼	L	C	T	Sp	Zen	Eism	.....	D	Selec	3	Ther	W	½-Fl	144	Shel	36x4	36x7	Lav	Wau	.....
Master M	4300	2390	Buda	4	4¼x5½	28.9	3	¼	L	C	T	FS	Mas	Eism	I	D	B-Li	4	Arv	I	Torb	144	Det	34x4	36x7	Ross	McC	24
Master O	4400	2490	Buda	4	4¼x5½	28.9	3	¼	L	C	T	FS	Mas	Eism	I	D	B-Li	4	Arv	I	Torb	170	Det	34x4	36x7	Ross	McC	24
Master W	4500	2590	Buda	4	4¼x5½	28.9	3	¼	L	C	T	FS	Mas	Eism	I	D	B-Li	4	Arv	W	Timk	144	Det	34x4	36x7	Ross	McC	76
Master WL	4600	2690	Buda	4	4¼x5½	28.9	3	¼	L	C	T	FS	Mas	Eism	I	D	B-Li	4	Arv	W	Timk	170	Det	34x4	36x7	Ross	McC	76
Menominee D	....	2950	Cont	4	4½x5¼	27.2	3	5/32	L	C	T	FS	Strm	Eism	.....	F	Full	3	Spic	W	Timk	144	Tut	36x4	36x4†	Ross	Mon	80
Muskegon 20	4015	2325	Cont	4	4½x5¼	27.2	3	5/32	L	C	May	FS	Stew	Eism	.....	F	Full	3	Hart	I	Torb	144	Per	36x4	36x6	Lav	Pier	75
Nash 3018	3850	2175	Own	4	3¾x5¼	22.5	4	¼	L	C	T	Fo	Strm	Eism	.....	B	Selec	3	Own	I	Celf	144	Stan	34x4	34x6	Jac	Simp	73.5
Nash Quad 4017	6250	3250	Buda	4	4¾x5½	28.9	3	¼	L	C	T	Fo	Strm	Eism	.....	B	I-Cl	4	Spic	F	Own	124	Math	36x5	36x5	Lav	Simp	55
Nelson & Le Moon F2	4100	2775	Cont	4	4½x5¼	27.2	3	5/32	L	C	T	Sp	Strm	Bosch	W	L	B-Li	3	Own	W	Timk	Op	Tut	36x4	36x7	Lav	Mon	80
Netco D	5900	3000	Cont	4	4⅛x5¼	27.2	3	5/32	L	C	T	Sp	Zen	Eism	.....	L	B-Li	3	Hart	W	Timk	144	Per	36x4	36x6	Ross	.....	75
Northwestern W2	4900	2950	Cont	4	4⅛x5¼	27.2	3	5/32	L	C	MR	Sp	Strm	Bosch	.....	H	Selec	3	Bld	W	Shel	164	Shel	34x4	36x7	Ross	.....	80
Ogden B1	4300	2695	Cont	4	4⅛x5¼	27.2	3	5/32	L	C	T	FS	Rayf	Bosch	.....	B	Selec	4	Acme	W	Timk	160	Tut	36x4	36x7	Gem	Pier	70
O. K. 2T	4000	2650	Buda	4	4¼x5½	27.2	3	5/32	L	C	T	FS	Zen	Eism	.....	D	Selec	3	Hart	W	Wis	150	Tut	36x4	36x7	Ross	Pier	85
Oneida C	5440	3000	Cont	4	4¼x5¼	27.2	3	5/32	L	C	L	FS	Strm	Bosch	Opt	M	Cott	3	Spic	W	Timk	144	Math	36x4	36x7	Ross	Pier	82½
Oskhosh 4	4200	3500	H-Sp	4	3¼x5	16.9	3	5/32	L	C	C	FS	Zen	Bat	.....	L	B-Li	4	Acme	B	Flot	130	Tut	36x6*	36x6*	Ross	.....	60
Packard 2-E	5100	3400	Own	4	4 x5½	25.6	3	¼	L	C	C	Fo	Own	Dix	Bij	D	Selec	4	Spic	W	Flot	144	.....	34x4	34x4†	Own	Own	48
Paige 50-18	5200	2950	Cont	4	4½x5¼	27.2	3	5/32	L	C	T	FS	Strm	Bosch	.....	D	Selec	4	Spic	W	Timk	150	Per	36x4	36x7	Jac	Pier	80
Parker	4750	3150	Cont	6	3½x5¼	29.4	3	¼	L	T	T	Sp	Strm	Dix	West	L	Selec	3	Spic	W	Own	150	Tut	34x4	36x3½†	Ross	Pier	75
Pierce-Arrow	6250	3750	Own	4	4 x5½	25.6	4	¼	L	P	T	Fo	Own	Eism	.....	C	Selec	4	Own	W	Flot	144	S-El	36x4	36x4†	Own	Own	85
Rainier R-8	3600	2250	Cont	4	3¾x5	....	3	5/32	L	P	Har	FS	Zen	Sim	.....	L	B-Li	4	Arv	I	Torb	144	Det	34x4	34x6	Lav	Mon	80
Republic 19	4450	2395	Cont	4	4⅛x5¼	27.2	3	5/32	L	P	C	FS	Strm	Bosch	.....	D	Full	4	Arv	I	Torb	144	Opt	Opt	Opt	Jac	Pharo	.....
Rowe CDW	4500	3000	Wis	4	4 x5	32	4	¼	L	C	May	Fo	Zen	Bosch	.....	L	B-Li	4	Arv	W	Timk	142	Shel	34x4	36x4†	Ross	Simp	53
Royal	....	3200	Wis	4	4 x6	25.6	....	....	....	C	T	....	Strm	Bosch	Opt	B	Own	...	Own	W	Timk	...	Mer	36x4½	36x6	Ross	Mon	.....
Sandow Spl	3800	2650	Cont	4	3¾x5	22.5	3	5/32	L	P	T	FS	Strm	Eism	.....	D	Full	3	K-B	W	Timk	150	GC	36x4	36x6	Ross	Mon	24
Schacht	5500	3150	Buda	4	4¼x5½	28.9	3	¼	R	P	Own	Fo	Sheb	Bosch	.....	H	Own	3	Hart	W	Own	144	Nat	36x3½	36x7	Own	Dup	70
Schwartz	4000	2675	Cont	4	4⅛x5¼	27.2	3	5/32	L	C	Fed	FS	Strm	Bosch	.....	L	B-Li	3	Hart	I	Torb	146	.....	36x4	36x7	Ross	Pier	.....
Selden JWBL	5050	3050	Cont	4	4⅛x5¼	27.2	3	5/32	L	C	Bus	FS	Strm	Bosch	.....	L	B-Li	4	Spic	W	Timk	162	Per	36x4	36x7	Jac	Pier	70
Service 41	5180	3000	Buda	4	4¾x5½	28.9	3	¼	L	C	T	Fo	Strm	Eism	.....	D	Selec	3	Spic	W	Timk	160	.....	36x4	36x7	Ross	Simp	70
Shaw M-3	....	2750	Cont	4	4½x5¼	27.2	3	5/32	L	C	T	FS	Zen	Bosch	.....	L	B-Li	3	Spic	W	Timk	153	Per	36x4	36x6	Gem	.....	75
Signal J	5010	3100	Cont	4	4⅛x5¼	27.2	3	5/32	L	C	McC	FS	Strm	Eism	.....	L	B-Li	4	Spic	W	Timk	150	Per	34x4	36x8	Lav	Pier	80
Standard 76	4380	2800	Cont	4	4⅛x5¼	27.2	3	5/32	L	L	T	FS	Schlr	Eism	.....	D	B-Li	4	Spic	W	Timk	140	.....	36x4	36x6	Ross	.....	70
Stewart 7	4460	2575	Cont	4	4⅛x5¼	27.2	3	5/32	L	P	T	FS	Zen	Eism	.....	F	Full	3	Hart	I	IG	156	Det	34x4	34x4†	Ross	Pier	70
Sullivan E	4500	2850	Buda	4	4⅛x5½	27.2	3	¼	L	P	V	Fo	Strm	Bosch	.....	L	B-Li	3	Bld	W	Timk	150	Shel	36x4	36x6	Ross	.....	71
Sullivan EL	4500	2950	Buda	4	4⅛x5½	27.2	3	¼	L	C	V	Fo	Strm	Bosch	.....	L	B-Li	4	Spic	W	Shel	...	US	36x4	36x6	Ross	.....	71
Superior E	3600	2275	Cont	4	4⅛x5¼	27.2	3	....	L	C	Idl	.....	Strm	Eism	.....	F	Full	3	Arv	I	Torb	144	Tut	37x5*	40x8*	Ross	Pier	.....
Tower F	4700	2975	Cont	4	4⅛x5¼	27.2	4	¼	L	C	T	Sp	Strm	Bosch	.....	F	Full	3	Spic	W	Timk	146	Det	36x4	36x7	Ross	Pier	70
Traffic	3300	1395	Cont	4	3¼x5	22.5	3	¼	O	T	C	Sp	Cart	King	.....	B	Covt	3	UM	W	Russ	133	Det	34x3½	34x5	Dit	.....	75
Velie 25-B	4500	2950	Cont	4	4½x5¼	27.2	3	5/32	L	C	T	FS	Strm	Bosch	.....	B	B-Li	4	Spic	W	Timk	135	Math	36x4	36x7	Gem	Pier	80
Vim 22	4500	3150	Her	4	3¾x5½	22.5	4	5/32	L	C	McC	C	Zen	Dix	.....	D	Selec	4	Spic	W	Shel	142	Shel	34x4	36x4	Gem	Dup	.....
Ward La France	5250	3350	.....	4	4½x5¼	27.2	3	5/32	L	G	C	Own	Sp	Zen	Mag	.....	B	Selec	4	Spic	W	Timk	166	.....	36x4	36x7	Ross	Simp	85
White TBC	4150	3300	Own	4	3¾x5⅛	22.5	3	....	L	C	C	FS	Own	Mag	.....	D	Selec	4	Own	B	Own	145	.....	36x4	36x4†	Own	.....	.....
Wichita M	4700	2750	Wau	4	3¾x5¼	22.5	3	¼	L	C	P	Per	C	Strm	Bosch	.....	C	Covt	3	Own	W	Shel	144	.....	36x4	36x6	Ross	Wau	.....
Wilson E	4500	2800	Cont	4	4⅛x5¼	27.2	3	5/32	L	C	T	FS	Mar	Eism	.....	C	Covt	3	K-B	W	Timk	144	Tut	36x4	36x7	Ross	Pier	80
Winther 49	5300	3000	Wis	4	4 x6	25.6	3	¼	L	P	T	G	Mas	Eism	Bij	F	Full	3	Bld	I	Cl	150	Math	36x4	36x4†	Ross	Dup	80
Witt Will	4550	2850	Cont	4	4⅛x5¼	27.2	3	5/32	L	G	C	FS	Zen	Eism	.....	D	Selec	3	Spic	W	Timk	144	S-El	36x3½	36x7	Ross	Pier	67

G. C. M. Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr.Cent of Weight on Rear Wheels
2½ Ton																												
Beck-Hawkeye	5000	2850	Cont	4	4 1/8x5 1/4	27.2	3	1/8	....	P	Strm	Fo	Strm	Bosch	.....	F	Full	3	Bld	I	½-Fl	160	Hig	36x4	36x7	Lav	Pier	70
Bessemer J-2	4500	2785	Cont	4	4 1/8x5 1/4	27.2	3	3/16	L	C	Fed	FS	Rayf	Bosch	.....	B	B-Li	4	Arv	I	Torb	158	Per	36x4	36x4†	Ross	Pier	67
Bethlehem E	3950	2365	Own	4	4 x4 1/2	25.6	3	1/4	L	T	T	Fo	Sheb	Will	G&D	B	Det	3	UP	I	Russ	144	Shel	34x4	34x6	Lav	Mon	85
Brinton F	4600	3000	Cont	4	4 1/8x5 1/4	27.2	3	3/16	L	T	T	Fo	Strm	Bosch	.....	D	Selec	3	Spic	W	Flot	150	.....	36x4	36x6	Ross	Pier	....
Concord B	4600	3000	Buda	4	4 1/4x5 1/2	28.9	3	1/4	L	C	T	Fo	Zen	Eism	.....	L	B-Li	3	Spic	W	Timk	150	Per	36x4	36x4†	Ross	Mon	70
Corbitt B	5000	3200	Cont	4	4 1/8x5 1/4	27.2	3	1/16	L	C	T	FS	Strm	Eism	G&D	L	B-Li	4	.....	W	Shel	148	Shel	36x4	36x7	Ross	Pier	75
Day-Elder C	4600	2750	Buda	4	4 1/4x5 1/2	28.9	3	1/4	L	P	Bus	FS	Zen	Berl	.....	D	Covt	3	Hart	W	Wis	150	Shel	36x4	36x7	Ross	Mon	72
DeKalb E 2½	4800	2600	Cont	4	4 1/8x5 1/4	27.8	3	1/16	L	P	T	Fo	Mas	Eism	.....	F	Full	3	K-B	W	Flot	144	Math	36x5	36x6	Ross	.....	71
Doane 1919	5000	3500	Wau	4	4 1/4x5 3/4	28.9	3	1/4	...	P	C	Sp	Mas	Bosch	.....	D	Selec	3	D	Ch	Dead	156	.....	36x4	36x7	Lav	Wau	79
Gary HU	4730	....	Buda	4	4 1/4x5 1/2	28.9	3	1/4	L	T	C	Strm	Eism	.....	F	Full	4	Hart	W	Shel	162	Tut	36x4	36x7	Ross	Simp	.....
Gersix G	5200	3150	Buda	6	3 1/2x5 1/4	29.3	3	1/8	L	P	C	I	Sp	Strm	Bosch	West	B	Cott	3	Bld	W	Own	150	Tut	36x4	36x7	Ross	Mon	75
Gersix K	5200	3150	Buda	4	4 3/4x5 1/2	28.9	3	1/4	L	C	I	Fo	Strm	Bosch	.....	B	Cott	3	Bld	W	Own	150	Tut	36x4	36x7	Ross	Mon	75
Gramm-Bernstein	5210	3350	Wau	4	4 1/4x5 3/4	28.9	3	1/4	L	C	T	Sp	Zen	Eism	.....	D	Selec	3	Arv	W	Shel	156	.....	36x4	36x4†	Ross	Wau	70
Harvey WFA	5300	3000	Buda	4	4 1/4x5 1/2	28.9	4	1/4	L	T	.....	FS	Strm	Eism	.....	B	B-Li	4	Spic	W	Shel	150	Shel	36x4	36x7	Ross	Dup	60
Hewitt-Ludlow	4800	3150	Buda	4	4 1/4x5 1/2	28.9	4	.....	...	...	.....	Fo	Strm	.....	.....	B	Cott	4	Spic	.....	Wis	150	.....	36x4	36x7	Ross	.....	....
Kankakee E	3500	2265	Cont	6	3 1/2x5 1/4	29.4	3	1/4	L	C	H	FS	Zen	Will	Delc	U	Munc	3	Acme	I	Russ	147	Tem	34x4	34x6	Ross	.....	70
Kelly-Springfield K35	5200	3250	Own	4	3 3/4x5 1/4	22.5	3	1/4	L	C	Fed	Fo	Zen	Eism	.....	C	Covt	3	Own	C	Dead	144	Per	36x4	36x4†	Gem	Own	89
Kelly-Springfield K36	5540	3250	Own	4	3 3/4x5 1/4	22.5	3	1/4	L	C	Fed	Fo	Zen	Eism	.....	C	Covt	3	Spic	W	½-Fl	144	Per	36x4	36x4†	Gem	Own	89
Kimball	....	....	Wis	4	4 1/4 x6	28.9	3	1/4	L	C	Flex	FS	Zen	Eism	.....	L	Selec	4	Spic	W	Timk	Op	US	36x4	36x7	Lav	Dup	80
Koehler M	4200	2965	Own	4	4 x5 1/8	25.6	3	1/4	L	C	G	T	P	Strm	Eism	.....	D	B-Li	4	Spic	W	Timk	162	.....	36x4	36x7	Own	Simp	75
Larrabee-Deyo	5200	3000	Cont	4	4 1/8x5 1/4	27.2	3	1/16	L	C	Bus	Sp	Strm	Bosch	.....	L	B-Li	4	M	W	Shel	154	Mer	36x4	36x7	Ross	Pier	....
Maccar H	5110	3300	Cont	4	4 1/2x5 1/2	32.4	3	3/16	L	C	Own	FS	Strm	Bosch	.....	L	B-Li	3	Spic	.....	Timk	162	Mer	36x4	36x4†	Ross	Pier	70
Manly	....	2800	Wau	4	4 x5 3/4	25.6	3	1/4	L	C	T	Sp	Zen	Eism	.....	C	Selec	4	Ther	W	½-Fl	156	Shel	36x4	40x8	Lav	Wau	.....
Moreland 19 C	5380	3400	Cont	4	4 1/2x5 1/2	32.4	3	1/16	L	C	C	Fo	Mill	Dix	.....	D	Selec	4	Ther	W	Timk	Op	US	36x4	36x7	Ross	.....	....
Netco H	6500	3400	Cont	4	4 1/2x5 1/2	32.4	3	1/16	L	C	RT	Sp	Zen	Eism	.....	L	B-Li	4	Hart	W	Timk	170	Per	36x4	36x7	Ross	.....	75
Noble NW2	5050	3100	Cont	4	4 1/8x5 1/4	27.2	3	1/16	L	C	T	FS	Strm	Eism	.....	B	Full	4	Bld	W	Shel	148	Kal	36x4	36x7	Ross	Pier	80
Old Reliable	5750	3250	Wis	4	4 1/4 x6	28.9	3	1/4	L	C	H	FS	Strm	Bosch	.....	D	B-Li	3	Spic	W	Shel	160	Shel	34x4	36x4†	Ross	Mon	.....
Panhard E	4500	2350	Buda	4	4 1/4x5 1/2	33.6	3	1/16	L	C	CAS	P	Strm	Eism	Opt	D	Full	3	UP	I	Torb	150	Det	36x4	36x6	Lav	Dup	.....
Patriot	4600	3150	Cont	4	4 1/8x5 1/4	27.2	3	1/16	L	C	Own	Fo	Strm	Bosch	.....	D	Selec	4	Ther	H	W	156	S-El	34x4	34x7	W	Pier	80
Reliance	5000	3200	Buda	4	4 1/4x5 1/2	28.9	3	1/4	L	C	T	Fo	Strm	Bosch	.....	F	Full	3	Hart	E	Dead	150	Shel	36x4	36x4†	Ross	Pier	67
Rock Falls	2800	1850	Buda	6	3 1/2x5 1/4	29.4	3	3/16	L	P	H	FS	Rayf	Bosch	W	BB	GLee	3	Spic	SG	Flot	150	Tut	35x5*	35x5*	Gem	.....	50
Rowe CDW	4600	3250	Wis	4	4 x5	25.6	4	1/4	L	C	May	Fo	Zen	Bosch	.....	L	B-Li	4	Arv	W	Timk	164	Shel	34x4	36x4†	Ross	Simp	61
Royal	....	3500	Wis	4	4 1/4 x6	29.8	.....	.....	...	C	T	.....	Strm	Bosch	Opt	B	Own	...	Own	W	Timk	132	Mer	36x4 1/2	36x6	Ross	Mon	.....
Sandow J	4500	2975	Cont	4	4 1/8x5 1/4	27.2	3	1/16	L	P	T	FS	Strm	Bosch	.....	D	B-Li	3	K-B	W	Timk	165	GC	36x4	36x7	Ross	Mon	70
Sanford 25	5400	3000	Cont	4	4 1/4x5 1/2	28.9	3	1/4	L	P	T	Fo	Strm	Bosch	.....	B	B-Li	4	Spic	W	Shel	156	S-El	36x4	36x4†	Ross	.....	75
Schacht	6000	3500	Buda	4	4 1/8x5 1/4	28.9	3	1/4	R	P	Own	Fo	Sheb	Bosch	.....	H	Selec	3	Hart	W	Own	156	Nat	36x4	36x4†	Own	Dup	70
Schwartz	4000	2675	Cont	4	4 1/8x5 1/4	27.2	3	1/16	L	P	Own	Fo	Sheb	Bosch	.....	H	B-Li	3	Hart	I	Torb	146	.....	36x4	36x7	Ross	Pier	.....
Sterling	5550	3300	Ster	4	4 1/4 x5 3/4	28.9	3	1/4	R	C	Own	Sp	Zen	Eism	.....	.....	B-Li	3	Spic	W	Shel	156	Math	36x4	36x4†	Ross	Wau	80
Tiffin MW	4890	2850	Cont	4	4 1/8x5 1/2	27.2	3	1/16	L	C	T	FS	Rayf	Bosch	.....	D	Covt	3	Acme	W	Timk	148	Kal	36x4	36x4 1/2†	Ross	Pier	80
Transport 50	4250	2585	Cont	4	4 1/8x5 1/4	27.2	3	1/16	L	C	C	FS	Strm	Eism	.....	F	Full	4	Arv	I	Cl	150	Det	36x4	36x6	Jac	Dup	70
Triangle B	4900	2850	Rut	4	4 1/8x5 1/2	27.2	3	....	L	P	Per	Fo	Strm	Eism	.....	F	Full	4	UP	I	Cl	151	Det	36x4	36x7	Gem	Pier	60
Union B	4800	2465	Cont	4	4 1/8x5 1/2	27.2	3	1/4	L	P	T	Fo	Sheb	Eism	.....	F	Full	4	UP	I	Russ	152	Math	36x4	36x7	Ross	Dup	70
United BX	....	....	Buda	4	4 1/4 x5 1/2	28.9	3	1/4	L	P	T	Fo	Strm	Eism	Opt	L	B-Li	4	Bld	W	Shel	Op	.....	36x4	36x7	Ross	Simp	80
U. S. H.	5200	3250	Cont	4	4 1/8x5 1/4	27.2	3	1/16	L	C	T	Sp	Strm	Eism	.....	H	B-Li	4	Opt	W	Shel	144	Shel	34x4	36x4†	Lav	Pier	80
Wichita R	5200	2950	Wau	4	3 3/4x5 1/4	22.5	3	1/4	L	P	Per	C	Strm	.....	.....	C	B-Li	4	Own	W	Shel	144	.....	36x4	36x7	Ross	Wau	.....
Wilcox Q	4700	....	Own	4	4 1/4 x5 1/2	28.9	3	1/4	L	P	T	S	Strm	Mag	.....	W	Selec	4	Own	W	½-Fl	135	Shel	36x4	36x3 1/2†	Ross	Pier	80
3 Ton																												
Denby 25	4500	3000	Cont	4	4 1/8x5 1/4	27.2	3	3/16	R	C	L	FS	Strm	Eism	.....	F	Full	4	UP	I	Russ	150	Det	36x4	36x7	Gem	Mon	79
F. W. D. B.	6300	4500	Wis	4	4 3/4 x5 1/2	36.1	3	1/4	T	C	T	Fo	Strm	Eism	.....	D	Cott	3	Opt	B	Flot	124	Tut	36x6	36x6	Ross	Pier	55
Manly 60	....	3350	Wau	4	4 1/4 x5 3/4	29.8	3	1/4	L	C	T	Sp	Zen	Eism	.....	D	Selec	4	Ther	W	½-Fl	156	Shel	36x5	40x10	Lav	Wau	.....
O. K. 2-T	4250	3250	Buda	4	4 1/4 x5 1/2	28.9	3	3/16	L	C	T	FS	Zen	Eism	.....	D	Selec	4	Hart	W	Wis	154	Tut	36x4	36x8	Ross	Pier	85
Packard 3-E	7000	4100	Own	4	4 1/8x5 1/2	32.4	3	1/4	L	C	C	Fo	Own	Dix	Bij	D	Selec	4	Spic	W	Flot	186	.....	36x5	36x5	Own	Own	52.1
Parker	5400	3700	Cont	6	3 1/2x5 1/4	29.4	3	1/4	L	C	T	Sp	Strm	Dix	.....	D	Selec	3	Spic	W	Own	160	Tut	34x4	36x5†	Ross	Pier	75
Rennoc M	5050	2895	Buda	4	4 1/8x5 1/2	27.2	3	1/4	L	C	T	Fo	Strm	Spld	.....	W	Warn	4	Hart	W	Wis	144	Row	36x5	36x7	Lav	Pier	65
Ricker B	6900	4600	Own	4	4 1/4 x6	28.9	5	1/4	T	C	T	FS	B&B	Berl	West	C	Selec	4	Own	W	Own	150	Opt	36x5	36x5†	Ross	Own	75
Rowe GW	5500	4500	H-Sp	8	3 1/4 x5	33.8	3	1/16	L	C	May	Fo	Zen	At-K	West	L	B-Li	4	M	W	Shel	170	Shel	37x7*	42x9*	Ross	.....	55
Vim 23	6000	3950	Her	4	4 1/4 x5 1/2	28.9	5	1/16	L	C	McC	C	Zen	Dix	.....	D	Selec	4	Spic	W	Shel	175	Shel	36x4	36x4†	Gem	Dup	.....
White TJ	7750	4100	Own	4	3 3/4 x5 3/4	22.5	....	....	L	C	T	Fo	Own	.....	.....	D	Selec	4	Own	DR	Own	174	.....	36x6	40x6†	Own	Own	.....
Winther 69	6400	3800	Wis	4	4 x6	25.6	3	1/4	L	P	T	G	Mas	Eism	Bij	B	B-Li	4	Bld	I	Cl	150	Math	36x5	36x5†	Ross	Dup	85
3½ Ton																												
Acason L	6400	....	Wau	4	4 1/4 x6 3/4	28.9	3	1/4	L	P	Can	Sp	Sheb	Eism	.....	M	Munc	4	Bld	W	Timk	172	Det	36x5	36x5†	Ross	Wau	76
Acme C	6516	3650	Cont	4	4 1/2x5 1/2	32.4	3	1/16	L	C	GO	FS	Rayf	Eism	.....	B	Cott	3	Bld	W	Timk	168	Det	36x5	40x5†	Ross	Dup	80
Armleder KW	6300	....	Cont	4	4 1/2x5 1/2	32.4	3	1/16	L	C	T	Fo	Sheb	Bosch	.....	D	B-Li	3	Opt	W	Timk	156	Math	36x5	36x5†	Ross	Pier	60
Atterbury 7D	7000	3975	Cont	4	4 1/2x5 1/2	32.4	3	1/4	L	T	T	Sp	Zen	Bosch	.....	B	B-Li	4	Spic	W	Timk	192	SP	36x5	40x5†	Gem	Mon	92
Available H-3	6400	....	Cont	4	4 1/2x5 1/2	32.8	3	1/16	L	C	T	Sp	Strm	Bosch	.....	B	B-Li	4	Spic	W	Timk	172	Tut	36x5	40x5†	Lav	Pier	....
Bessemer K	5900	3450	Cont	4	4 1/2x5 1/2	32.4	3	1/16	L	C	C	FS	Rayf	Bosch	.....	B	B-Li	4	Spic	I	Torb	175	Per	36x6	36x6†	Ross	Pier	75
Bethlehem F	4983	3465	Own	4	4 3/8x6	30.6	4	1/4	L	P	C	Fed	FS	Sheb	Will	G&D	B	Det	3	UP	I	Russ	162	Shel	34x4	34x5†	Lav	Mon	85
Brockway R	6800	3750	Cont	4	4 1/2x5 1/2	32.4	3	1/16	L	C	Bus	FS	Sheb	Eism	.....	L	B-Li	4	Spic	W	Timk	Op	Mer	36x5	36x5†	Gem	Opt	70
Clydesdale 90	6600	....	Cont	4	4 1/2x5 1/2	32.4	3	1/16	L	C	T	Sp	Zen	Bosch	.....	L	B-Li	4	Spic	W	Timk	170	Stan	36x5	40x5†	Ross	Own	78
Corbitt A]	6780	4000	Cont	4	4 1/2x5 1/2	32.4	3	1/16	L	C	T	Sp	Strm	Eism	G&D	M	Cott	3	.....	W	Shel	168	Shel	36x5	36x10	Ross	Pier	80

G. C. M. Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
3½ Ton—Continued																												
Couple Gear	9000	6000	Wis	4	5.1x5½	35	4	1/16	T	G	H	Fo	Strm	Eism	.....	O	Own	5	.....	B	Own	144	Tut	36x4†	36x4†	Ross	.....	55
Dart L	6740	4000	Buda	4	4½x6	32.5	3	1/4	L	C	C	Fo	Zen	Eism	.....	W	Warn	4	Spic	W	Timk	160	Per	36x5	36x10	Ross	Simp	75
Day-Elder F	5600	3350	Cont	4	4½x5½	32.4	3	1/16	R	P	Bus	FS	Zen	Berl	.....	D	B-Li	4	Hart	W	Wis	165	Shel	36x5	36x5†	Ross	Mon	73
Denby 27	6890	4150	Cont	4	4½x5½	32.4	3	1/16	L	C	L	FS	Strm	Eism	.....	D	Warn	4	UP	I	Cl	170	Det	36x5	36x10	Ross	Simp	78
Diamond T-LB	6570	4150	Cont	4	4½x5½	32.4	3	1/16	L	C	T	Fo	Strm	Bosch	.....	L	B-Li	4	Spic	W	Timk	180	Math	36x5	36x5†	Gem	Pier	.....
Dorris K7	6500	3800	Own	4	4¼x5½	28.9	3	1/4	L	C	T	Fo	Strm	Bosch	West	D	Warn	4	Spic	W	Timk	176	Row	36x5	36x10	Ross	Own	70
Duplex E	6050	4000	Buda	4	4¼x5½	28.9	3	1/4	L	O	L	FS	Sheb	Eism	.....	L	B-Li	4	Bld	I	Own	130	Tut	36x6	36x6	Lav	Dup	60
Fageol	7300	4250	Wau	4	4¾x5¾	36.1	3	1/4	L	C	Flex	Sp	Zen	Dix	.....	B	Selec	5	Spic	W	Timk	156	Math	36x5	36x5†	Ross	Wau	80
Federal W	7000	3350	Cont	4	4½x5½	32.4	3	1/16	L	C	T	Sp	Zen	Eism	.....	B	Own	4	Spic	W	Timk	156	Math	36x5	36x5†	Gem	Mon	79
Garford 77C	7235	4300	Wis	4	4¾x5½	36.1	3	1/4	L	C	T	Fo	Rayf	Eism	.....	L	Selec	4	Spic	W	Timk	128	Per	36x5	40x5†	Ross	Simp	.....
Gary K	6500	....	Buda	4	4½x6	32.4	3	1/4	L	P	T	C	Strm	Eism	.....	W	Warn	4	Bld	W	Shel	162	Tut	36x5	36x5†	Ross	Simp	.....
Giant 17	6800	3850	Cont	4	4½x5½	32.4	3	1/16	L	C	C	FS	Strm	Eism	.....	W	Warn	4	Spic	W	Timk	116	Det	36x5	36x5†	Ross	Pier	70
G. M. C. 71A	6985	3750	Cont	4	4½x5½	32.4	3	1/16	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	163	Det	36x5	40x5†	Lav	Mon	75
G. M. C. 71B	7100	3800	Cont	4	4½x5½	32.4	3	1/16	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	187	Det	36x5	40x5†	Lav	Mon	75
Gramm-Bernstein	6790	4000	Wau	4	4½x5¾	32.4	3	1/4	L	C	T	Sp	Zen	Eism	.....	D	Selec	4	Own	W	Shel	158	.....	36x5	40x5†	Ross	Wau	70
Hahn F	7000	....	Cont	4	4½x5½	32.4	4	1/4	L	C	Own	Fo	Strm	Bosch	.....	D	B-Li	4	Spic	W	Timk	Op	Del	36x5	36x5†	Ross	Pier	.....
Hall	6100	3500	Cont	4	4½x5½	32.4	3	1/16	L	P	L	FS	Zen	Bosch	.....	L	B-Li	...	K-B	W	Timk	Op	Det	36x5	36x5†	Gem	Dup	.....
Harvey WHA	7700	3900	Buda	4	4½x6	32.4	4	1/4	L	P	.....	FS	Strm	Eism	.....	B	B-Li	4	Spic	W	Timk	Op	Tut	36x5	36x5†	Ross	Pier	60
Hendrickson J	....	3800	Buda	4	4¼x5¾	28.9	3	1/4	L	P	T	Fo	Strm	Dix	.....	D	Full	4	Ther	W	Timk	Op	Tut	36x5	36x5†	Ross	Pier	80
Hewitt-Ludlow	6300	3850	Buda	4	4½x6	32.4	....	....	....	....	....	....	Strm	Bosch	.....	B	Cott	4	Spic	.....	Wis	156	.....	36x5	36x5†	Lav	.....	.....
Hurlburt	6400	4250	Buda	4	4½x6	32.4	3	1/4	L	C	T	FS	Flch	Eism	.....	D	B-Li	4	Spic	W	Flot	156	.....	36x5	36x5†	Ross	Dup	.....
Indiana R	6380	3450	Rut	4	4⅜x5½	30.6	3	1/4	L	C	T	Fo	Strm	Eism	.....	B	Selec	4	Acme	W	½-Fl	156	S-El	36x5	36x5†	Wohl	Pier	75
Kelly-Springfield K-40	8285	4250	Own	4	4½x6½	32.4	3	1/4	L	C	Fed	Fo	Rayf	Eism	.....	C	Covt	3	Own	C	Dead	150	Per	36x5	40x5†	Gem	Own	93
Kissel-Heavy Duty	7000	3905	Own	4	4¼x5½	28.9	3	1/16	L	C	McC	Sp	Strm	Eism	.....	W	Warn	4	Spic	W	Shel	168	Shel	36x5	36x5	Ross	Pier	75
Lane K	5870	3900	Cont	6	3¾x5¼	33.5	3	1/4	L	P	Hvn	FS	Strm	Eism	Dyn	B	Full	3	Acme	W	Shel	160	Kal	36x5	36x5†	Ross	Pier	.....
Larrabee-Deyo	6000	3950	Cont	4	4½x5½	32.4	3	1/16	L	C	Bus	Sp	Strm	Bosch	.....	L	B-Li	4	M	W	Shel	172	Mer	36x5	36x5†	Ross	Pier	.....
Maccar M	6550	4100	Cont	4	4½x5½	32.4	3	1/16	L	C	Own	FS	Strm	Bosch	.....	L	B-Li	3	Spic	.....	Timk	174	Mer	36x5	36x5†	Ross	Pier	70
Mack AC	8070	4600	Own	4	5 x6	40	2	....	L	C	T	FS	Strm	Dix	.....	D	Selec	3	.....	C	Dead	Op	.....	36x5	40x5†	Ross	Own	46
Master A	6900	3890	Buda	4	4½x6	32.4	4	1/4	L	C	T	FS	Mas	Eism	.....	D	B-Li	4	Spic	W	Timk	158	Det	36x5	40x5	Ross	Pier	28
Menominee G	....	3880	Cont	4	4½x6½	32.4	3	1/4	L	T	T	FS	Strm	Eism	.....	F	Full	4	Spic	W	Timk	160	Tut	36x5	36x6	Ross	Mon	80
Nelson & Le Moon F3½	6000	3750	Cont	4	4¼x6½	32.4	3	1/4	L	C	T	Sp	Zen	Eism	.....	L	B-Li	4	Own	W	Timk	Op	Tut	36x5	36x5†	Lav	Mon	80
Old Reliable	6650	4000	Wis	4	4¾x5½	28.9	3	1/4	L	C	T	FS	Strm	Bosch	.....	D	B-li	...	Spic	W	Shel	160	Shel	36x5	36x5†	Ross	Mon	.....
Oneida D	7270	3700	Cont	4	4½x5½	32.4	3	1/16	L	C	T	FS	Rayf	Bosch	.....	D	Cott	3	Spic	W	Timk	160	Math	36x5	36x5†	Ross	Pier	82½
Paige 51-18	7000	3950	Cont	4	4½x5½	32.4	3	1/16	L	C	L	FS	Strm	Bosch	Opt	M	Selec	4	Spic	W	Timk	160	Per	36x5	36x5†	Jac	Simp	80
Republic 20	6600	3450	Cont	4	4¼x5½	28.9	3	1/4	L	P	C	FS	Strm	Eism	.....	D	Full	4	K-B	I	Torb	165	Opt	Opt	Opt	Jac	Pharo	.....
Rowe DEW	6520	3800	Wis	4	4 x6	25.6	4	1/4	L	C	May	Fo	Zen	Bosch	.....	L	B-Li	4	M	W	Shel	156	Shel	36x5	36x5†	Ross	Simp	54
Sandow M	6500	3995	Cont	4	4½x5½	32.4	3	1/16	L	P	T	FS	Strm	Bosch	.....	D	B-Li	3	K-B	W	Timk	175	GC	36x5	36x5†	Ross	Mon	71
Sanford 35	6900	3975	Cont	4	4½x5½	32.4	3	1/16	L	P	T	Fo	Strm	Bosch	.....	B	B-Li	4	Spic	W	Shel	174	S-El	36x5	36x5†	Ross	.....	75
Schacht	6500	3950	Buda	4	4¼x5½	28.9	3	1/4	R	P	Own	Fo	Sheb	Bosch	.....	H	Own	3	Hart	W	Own	168	Nat	36x5	36x5†	Own	Dup	70
Selden NL	6550	3850	Cont	4	4½x5½	3	32.4	1/16	L	P	Bus	FS	Strm	Eism	.....	L	B-Li	4	Spic	W	Timk	164	Per	36x5	36x10	Ross	Pier	70
Service 71	6700	3900	Buda	4	4¼x5½	32.4	3	1/4	L	P	T	Fo	Strm	Eism	.....	D	Selec	4	Spic	W	Timk	171	Per	36x5	36x5†	Ross	Simp	70
Service 76	7100	4200	Buda	4	4½x6	32.4	3	1/4	L	C	T	Fo	Strm	Eism	.....	D	Selec	4	Spic	W	Timk	171	.....	36x5	36x5†	Ross	Simp	70
Signal M	7070	4100	Cont	4	4½x5½	28.9	3	1/16	L	C	McC	FS	Strm	Eism	.....	B	B-Li	4	Spic	W	Timk	168	Per	36x5	40x5†	Lav	Cont	80
Standard 66	6600	3675	Cont	4	4½x5½	32.4	3	1/16	L	C	T	FS	Strm	Eism	.....	D	B-Li	4	Spic	W	Timk	160	.....	36x5	36x5†	Gem	Mon	75
Sterling	8300	4325	Ster	4	4¼x6¾	28.9	3	1/4	L	C	Own	Sp	Rayf	Eism	.....	N	Own	3	Spic	W	Timk	162	Math	36x5	40x5†	Ross	Wau	90
Stewart 10	6080	3500	Cont	4	4½x5½	32.5	3	1/4	L	P	.....	FS	Zen	Eism	.....	F	Full	4	Hart	I	IG	165	Det	36x5	36x5	Ross	Pier	80
Tiffin PW	6850	3760	Cont	4	4½x5½	32.4	3	1/16	L	P	T	Sp	Zen	Batt	.....	B	Covt	3	Acme	W	Shel	160	Kal	36x5	36x5†	Ross	Pier	80
Titan	7350	4300	Buda	4	4½x6	32.4	3	1/4	L	P	T	Fo	Strm	Eism	Dyn	D	Cott	3	.....	I	C	162	Math	36x5	40x5†	Lav	Simp	70
Tower G	6800	4100	Cont	4	4½x5½	32.4	3	1/4	L	C	T	Sp	Strm	Bosch	.....	F	Full	4	Spic	W	Timk	165	Det	36x5	36x5†	Ross	Pier	70
Twin City 4 Wheel DB	7200	4750	Wis	4	5 ¼x6	42	3	....	L	C	T	FS	Strm	K-W	.....	M	Cott	3	.....	I	½-Fl	140	.....	36x6	36x6	Ross	Pier	60
United CX	....	....	Buda	4	4½x6	32.4	4	1/4	L	C	.....	Fo	Strm	Eism	Opt	L	B-Li	4	Bld	W	Shel	160	.....	36x5	36x5†	Ross	Simp	80
U. S. J.	7000	3950	Cont	4	4½x5½	32.4	3	1/16	L	C	T	Sp	Strm	Eism	.....	H	B-Li	3	Opt	W	Shel	162	Tut	36x5	35x6†	Lav	Pier	80
Velie 26-B	6500	3900	Cont	4	4½x5½	32.4	3	1/16	L	C	T	FS	Strm	Bosch	.....	B	B-Li	4	Spic	W	Timk	148	Math	36x5	36x5†	Gem	Pier	80
Victor M	6600	3800	Cont	4	4½x5½	32.4	3	1/16	L	C	Own	FS	Strm	Bosch	.....	L	B-Li	4	Spic	W	Timk	176	½-El	36x6	36x5†	Gem	.....	.....
Ward La France 3A	5500	3750	.....	4	4½x5½	32.4	3	1/16	L	C	Own	Sp	Zen	Mag	.....	.....	Selec	4	Spic	W	Timk	182	.....	36x5	36x5†	Ross	Simp	85
Wichita O	6500	3750	Wau	4	4½x5¾	32.4	3	1/4	...	C	EM	C	Strm	.....	.....	C	B-Li	4	Own	W	Shel	165	.....	36x5	36x5†	Ross	Wau	.....
Wilcox P	6300	....	Own	4	4¼x5	28.9	3	1/4	L	C	T	Sp	.....	Bosch	.....	C	Selec	4	Own	W	½-Fl	139	Shel	36x5	36x5†	Own	Pier	.....
Wilson G	6800	3800	Cont	4	4½x5½	32.4	3	1/16	L	C	T	FS	Mar	Eism	.....	D	Warn	4	K-B	W	Timk	160	Tut	36x5	36x5†	Ross	Pier	80
Winther 479	7700	4900	Wis	4	4¼x6	28.9	3	1/4	L	P	T	G	Mas	Eism	Bij	B	Full	4	Bld	I	Cl	158	Math	36x5	36x5†	Ross	Dup	65
4 Ton																												
Gabriel F	5800	4300	Buda	4	4½x6	38.9	3	1/4	L	T	T	Fo	Rayf	Bosch	L-N	B	B-Li	4	Spic	W	Timk	180	Mer	36x5	40x10	Gem	Dup	65
Kelly-Springfield K-45	8730	4400	Own	4	4½x6½	32.4	3	1/4	L	T	Fed	Fo	Rayf	Eism	.....	C	Covt	3	Own	C	Dead	150	Per	36x5	40x6†	Gem	Own	93
Kimball	....	....	Wis	4	4¾x5½	36.1	3	1/4	L	T	Flex	Fo	Zen	Berl	.....	L	B-Li	4	Spic	W	Shel	Op	US	36x5	40x10	Ross	Dup	80
Moreland 19G	7810	4375	Cont	4	4¾x6	36.1	3	1/4	L	C	C	FS	Mill	Dix	.....	D	Selec	4	Ther	W	Timk	162	US	36x5	40x5†	Ross	Cont	.....
Noble WW4	7170	3950	Cont	4	4½x5½	32.4	3	1/16	L	C	T	FS	Strm	Eism	.....	B	Full	4	Acme	W	Shel	168	Kal	36x5	36x5†	Ross	Pier	80
Packard 4E	7460	4450	Own	4	4½x5½	32.4	3	1/4	L	C	T	Fo	Own	Dix	Bij	D	Selec	4	Spic	W	Flot	186	.....	36x5	40x5	Own	Own	55
Parker	7100	4250	Cont	6	3¾x5½	33.7	3	1/4	L	C	T	Sp	Strm	Dix	West	D	Selec	4	Spic	W	Own	160	Tut	36x5	40x5†	Ross	Pier	85
Riker	7200	4700	Own	4	4¼x6	28.9	5	1/4	L	C	T	FS	B&B	Berl	West	C	Selec	4	Own	W	Own	150	Opt	36x5	36x6†	Ross	Own	77
Sanford 50	7600	4750	Cont	4	4½x5½	32.4	3	1/16	L	P	T	Fo	Strm	Bosch	.....	B	B-Li	4	Spic	W	Shel	174	S-El	36x5	40x6†	Ross	.....	75
Shaw M4	....	1850	Cont	4	3¾x5	22.4	3	1/16	L	T	T	F	Zen	Bosch	.....	L	B-Li	3	Spic	W	Timk	130	Per	34x4½	34x4½*	Gem	.....	.....
Union C	6600	3500	Wis	4	4¼x6	28.9	3	1/4	L	P	T	Fo	Sheb	Eism	.....	F	Full	4	UP	I	Torb	171	Math	36x6	36x10	Ross	Dup	75
Winther 88	7600	4200	Wis	4	4¼x6	28.9	3	1/4	L	P	T	G	Mas	Eism	Bij	B	B-Li	4	Bld	I	Cl	156	Math	36x5	40x5†	Ross	Dup	80

G. C. M. Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
5 Ton																												
Acason M	8350	....	Wau	4	4¾x6¾	36.1	3	¼	L	P	Can	Sp	Sheb	Eism	.....	B	Cott	3	Bld	W	Timk	187	Det	36x6	40x6†	Ross	Wau	77
Acme E	8860	4750	Cont	4	4¾x6	36.1	3	¼	L	C	GO	Fo	Rayf	Eism	.....	B	Cott	3	Bld	W	Timk	180	Det	36x6	40x6†	Ross	Cont	80
Atterbury 8 E	9635	4975	Cont	4	4¾x6	36.1	3	¼	L	C	T	Fo	Zen	Eism	.....	L	B-Li	4	Spic	W	Timk	167	SP	36x5	40x6†	Gem	Cont	98
Available 5	....	....	Cont	4	.....	....	3	3/16	L	C	T	Sp	Strm	Bosch	.....	B	B-Li	4	Spic	W	Timk	172	Tut	36x6	40x6†	Lav	Pier	.....
Brockway T	8800	4850	Cont	4	4¾x6	36.1	3	¼	L	C	Bus	Fo	Sheb	Eism	.....	L	B-Li	4	Spic	W	Timk	174	Mer	36x6	40x6†	Gem	Dup	.....
Clydesdale 120B	8500	....	Cont	4	4¾x6	36.1	3	¼	L	C	T	Fo	Strm	Eism	.....	L	B-Li	4	Spic	W	Timk	Op	Stan	36x5	40x6†	Ross	Own	76
Corbitt AA	8900	5000	Cont	4	5¼x5¾	41.1	3	1/16	L	C	T	FS	Strm	Eism	G&D	M	Cott	3	.....	W	Shel	168	Shel	36x6	40x6	Ross	Pier	75
Couple Gear	11000	6500	Wis	4	5¼x7	42	4	1/16	T	G	H	Fo	Strm	Eism	Own	.....	Own	75	.....	B	Own	144	Tut	36x5†	36x5†	Own	.....	60
Day-Elder E	10000	4500	Buda	4	4½x6	32.4	3	¼	L	P	Bus	Fo	Zen	Berl	.....	D	B-Li	4	Hart	W	Shel	170	Shel	36x5	40x6†	Ross	Mon	73
Denby 210	8590	4900	Cont	4	4½x5½	32.4	3	1/16	L	C	L	FS	Strm	Eism	.....	D	Warn	4	UP	I	Cl	170	Det	36x6	40x12	Ross	Simp	80
Diamond T-R	8300	4950	Cont	4	4½x5½	32.4	3	1/16	L	C	T	FS	Strm	Bosch	.....	L	B-Li	4	Spic	W	Timk	170	Math	36x6	40x6†	Gem	Pier	.....
Fageol	8300	5100	Wau	4	4¾x5¾	36.1	3	¼	L	C	Flex	Sp	Zen	Dix	.....	B	Selec	5	Spic	W	Timk	156	Math	36x6	36x6†	Ross	Wau	80
Federal X	8100	4400	Cont	4	4½x5½	32.4	3	1/16	L	C	T	Sp	Zen	Eism	.....	B	Own	4	Spic	W	Timk	156	Math	36x6	40x6†	Gem	Mon	80
Garford 6S	8870	5000	Wis	4	4¾x5½	36.1	3	¼	L	C	T	Fo	Rayf	Eism	.....	L	Selec	4	Spic	C	Dead	128	Per	36x6	40x6†	Ross	Simp	.....
G. M. C. 101-A	8000	4350	Cont	4	4½x5½	32.4	3	1/16	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	163	Det	36x6	40x6†	Lav	Mon	75
G. M. C. 101-B	8200	4400	Cont	4	4½x5½	32.4	3	1/16	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	187	Det	36x6	40x6†	Lav	Mon	75
Gramm-Bernstein	8700	5000	Wau	4	4¾x6¾	36.1	3	¼	L	C	T	Sp	Zen	Eism	.....	C	Selec	4	Own	W	Shel	168	.....	36x6	40x6†	Ross	Wau	70
Hall	7400	4500	Cont	4	4½x5½	32.4	....	....	L	P	L	FS	Zen	Bosch	.....	L	B-Li	...	K-B	Ch	Timk	Op	Per	36x4	40x6†	Gem	Dup	.....
Harvey WKA	8900	5000	Buda	4	4½x6	32.4	4	¼	L	P	.....	FS	Strm	Eism	.....	B	B-Li	4	Spic	W	Shel	160	Shel	36x6	40x6†	Ross	Dup	60
Hewitt-Ludlow	8000	5100	Buda	4	4½x6	32.4	....	....	....	....	....	....	Strm	Bosch	.....	B	Cott	4	Spic	C	.....	168	.....	36x6	40x6†	Lav	.....	.....
Hurlburt	7800	5250	Buda	4	4½x6	32.4	3	¼	L	C	T	FS	Flch	Eism	.....	D	B-Li	4	Spic	W	Flot	156	.....	36x5	40x6†	Ross	Dup	.....
Indiana L	8100	4600	Wau	4	4¾x6¾	36.1	3	¼	L	C	T	Sp	Strm	Eism	.....	B	Selec	4	Acme	W	½-Fl	167	S-El	40x5	40x6	Wohl	Wau	78½
Kelly Springfield K-50	9175	4900	Own	4	4½x6½	32.4	3	¼	L	C	Fed	Fo	Rayf	Eism	.....	C	Covt	3	Own	C	Dead	150	Per	36x6	40x6†	Gem	Own	93
Kimball	....	....	Wis	4	5½x6	42	3	¼	L	T	Flex	Fo	Mas	Berl	.....	L	B-Li	4	Spic	W	Shel	Op	US	36x6	40x12	Ross	Dup	80
Kissel-Goliath	7002	4755	Own	4	4¼x5½	28.9	3	1/16	L	C	McC	Sp	Strm	Eism	.....	W	Warn	4	Spic	W	Shel	180	Shel	36x6	36x6†	Ross	Pier	75
Larrabee-Deyo	7900	4750	Cont	4	4½x5½	36.1	3	1/16	L	C	Bus	Sp	Strm	Bosch	.....	L	B-Li	4	M	W	Shel	176	Mer	36x6	40x6†	Ross	Pier	.....
Master B	8000	4890	Buda	4	4½x6	32.4	4	¼	L	C	T	FS	Mas	Eism	.....	D	B-Li	4	Spic	W	Timk	170	Det	36x6	40x6†	Ross	Pier	72
Master BL	8200	4900	Buda	4	4½x6	32.4	4	¼	L	C	T	FS	Mas	Eism	.....	D	B-Li	4	Spic	W	Timk	194	Det	36x6	40x6†	Lav	Pier	72
Menominee	....	4950	Cont	4	4¾x6	32.4	3	1/16	L	C	T	FS	Strm	Eism	.....	F	B-Li	4	Spic	W	Timk	160	Tut	36x6	40x6†	Ross	Mon	80
Moreland 19-J	9000	4725	Cont	4	4¾x6	36.1	3	¼	L	C	Own	Fo	Mill	Dix	.....	D	Selec	4	Ther	W	Timk	192	US	36x6	40x6†	Ross	Cont	.....
Nelson & Le Moon F5	8000	4750	Buda	4	4½x6	32.4	4	¼	L	C	T	Fo	Strm	Bosch	West	L	B-Li	4	Own	W	Timk	Op	Tut	36x6	40x6†	Lav	Mon	80
Old Reliable	8400	5000	Opt	4	5.1x5½	....	3	¼	T	C	T	FS	Strm	Bosch	.....	D	D-Sea	4	Spic	W	Shel	168	Shel	36x5	40x6†	Ross	Opt	.....
Oneida E	9315	4750	Cont	4	5¼x5¾	44.1	3	1/16	L	C	C	FS	Strm	Bosch	Opt	M	Cott	3	Spic	W	Timk	180	Math	36x6	40x12	Ross	Pier	82½
Packard 5-E	8650	5150	Own	4	5 x5½	40	3	¼	L	C	C	Fo	Own	Dix	Bij	D	Selec	4	Spic	W	Flot	186	.....	36x6	40x6	Ross	Own	57.2
Parker	7900	5000	Cont	6	3¾x5½	33.7	3	¼	L	C	T	Sp	Strm	Dix	West	L	Selec	4	Spic	W	Own	168	Tut	36x5	40x6†	Ross	Pier	85
Pierce-Arrow	8100	5500	Own	4	4 7/8x6	38.3	4	3/32	T	P	T	Fo	Own	Eism	.....	C	Selec	3	Own	W	Flot	168	S-El	36x5	40x6	Own	Own	85
Rowe FW	8350	4900	Wis	4	4¾x5½	36.1	4	¼	L	T	May	Fo	Zen	Bosch	.....	L	B-Li	4	M	W	Shel	171	Shel	36x6	40x6	Ross	Simp	57
Royal	....	5000	Wis	4	4¾x5½	36.1	4	¼	L	C	T	...	Strm	Bosch	Opt	....	Own	...	Own	W	Timk	168	Mer	36x6	40x6†	Ross	Mon	.....
Sandow L	7800	4775	Cont	4	4½x5½	32.4	3	1/16	L	P	T	FS	Strm	Bosch	.....	D	B-Li	4	K-B	W	Timk	175	GC	36x6	40x6†	Ross	Mon	71
Sanford 50	7600	4750	Cont	4	4½x5½	32.4	3	1/16	L	P	T	Fo	Strm	Bosch	.....	B	B-Li	4	Spic	W	Shel	174	S-El	36x5	40x6†	.....	Ross	75
Schacht	8000	4950	Buda	4	4¼x5½	28.9	3	¼	R	P	Own	Fo	Sheb	Bosch	.....	H	Own	3	Hart	W	Own	168	Nat	36x5	40x6†	Own	Dup	70
Selden DL	8800	5000	Cont	4	4½x5½	32.4	3	1/16	L	P	Bus	FS	Strm	Eism	.....	L	B-Li	4	Spic	W	Timk	170	Per	36x6	40x12	Ross	Pier	70
Service 101	8240	5000	Buda	4	4½x6	32.4	3	¼	L	C	T	Fo	Strm	Eism	.....	D	Selec	4	Spic	W	Timk	171	.....	36x6	36x6†	Ross	Simp	75
Signal R	8200	5100	Cont	4	4¾x6	36.1	3	¼	L	C	McC	FS	Strm	Eism	.....	B	B-Li	4	Spic	W	Timk	180	Per	36x6	40x6†	Ross	Bull	80
Standard 86	8000	4650	Cont	4	4½x5½	32.4	3	1/16	L	C	T	FS	Strm	Eism	.....	D	B-Li	4	Spic	W	Timk	160	.....	36x6	40x6†	Gem	Mon	75
Sterling	9600	5100	Ster	4	4¾x6¾	36.1	3	¼	L	C	Own	Sp	Rayf	Eism	.....	M	Own	3	Spic	W	Timk	168	Math	36x6	40x6†	Ross	Wau	90
Tiffin	8400	5000	Cont	6	3¾x4¼	33.7	3	1/16	L	C	T	FS	Rayf	Bosch	West	D	Covt	3	Acme	W	Shel	168	Kal	36x6	40x6†	Ross	.....	80
Titan	9100	5150	Buda	4	4½x6	32.4	3	¼	L	P	T	Fo	Strm	Eism	.....	D	Cott	3	.....	I	C	156	Shel	36x5	40x6†	Lav	Simp	70
Twin City 4 Wheel Dr. A	8000	5250	Wis	4	5⅜x6	42	3	¼	T	C	H	FS	Strm	K-W	.....	M	Cott	3	.....	I	½-Fl	140	.....	36x7	.....	Ross	Pier	60
United VX	....	....	Buda	4	5⅛x6	42	3	¼	T	C	.....	Fo	Strm	Eism	.....	L	B-Li	4	Bld	W	Shel	160	.....	36x5	40x6†	Ross	Simp	80
Vim 24	8500	....	Her	4	4¼x5½	28.9	5	1/16	L	C	T	C	Zen	Dix	.....	D	Selec	4	Spic	W	Shel	...	Shel	.....	.....	Gem	Dup	80
White T G	7925	5000	Own	4	4¼x5¾	28.9	....	....	L	C	I	Fo	Own	Mag	.....	D	Selec	4	Own	.....	Own	174	.....	36x6	40x6	Own	Own	.....
U. S. K.	8500	4850	Wau	4	4¼x5¾	28.9	....	....	L	C	T	Fo	Own	Mag	.....	D	Selec	4	Own	DR	Flot	174	.....	36x6	40x6†	Own	Own	.....
Wilcox W	9000	....	Wau	4	4¾x6¾	36.1	3	¼	L	C	T	Sp	.....	.....	.....	C	Selec	4	Spic	W	½-Fl	162	Shel	36x5	40x12	Gem	.....	.....
Wilson H	7500	4600	Cont	4	4½x5½	32.4	3	1/16	L	C	T	FS	Mas	Eism	.....	D	Warn	4	K-B	W	Timk	160	Tut	36x6	40x6†	Ross	Pier	80
Winther 109	8300	5000	Wis	4	4¾x5½	36.1	3	¼	L	C	T	G	Mas	Eism	Bij	B	B-Li	4	Bld	I	Cl	162	Math	36x5	40x6†	Ross	Dup	80
5½, 6 and 7 Ton																												
Doane 1919	8500	5650	Wau	4	4¾x6¾	36.1	3	....	I	C	C	Sp	Mas	Bosch	.....	D	Selec	3	D	Ch	Dead	178	.....	36x6	40x6†	Lav	Wau	79
Hall	8000	4500	Cont	4	4½x5½	32.4	....	....	L	P	L	FS	Zen	Bosch	.....	.....	B-Li	...	K-B	W	Timk	Op	Det	36x5	40x6†	Gem	Dup	.....
Maccar 5½	8200	5000	Wis	4	5.1x5½	41.5	3	¼	T	C	Own	FS	Zen	Bosch	.....	L	B-Li	4	Spic	W	Timk	186	Mer	36x5	40x6†	Ross	Pier	70
Mack 5½	8650	5250	Own	4	5 x6	40	2	....	L	C	T	FS	Rayf	Bosch	.....	C	Selec	4	Spic	W	Timk	105	Per	36x5	40x5†	Ross	Simp	50
Garford 6-Ton	9350	5300	Wis	4	5.1x5½	41.5	3	¼	T	C	T	Fo	Rayf	Eism	.....	L	Selec	4	Spic	C	Dead	128	Per	36x6	40x7†	Ross	Simp	.....
Kelly-Springfield K-60	9500	5200	Own	4	4½x6½	32.4	3	¼	T	C	Fed	Fo	Rayf	Eism	.....	C	Covt	3	Own	C	Dead	150	Per	36x6	40x7†	Gem	Own	93
Packard 6-E	8925	5400	Own	4	5 x5½	40	3	¼	L	C	C	Fo	Own	Dix	Bij	D	Selec	4	Spic	W	Flot	186	SP	36x6	40x7	Ross	Own	58.5
Royal 6	....	5400	Wis	4	5⅛x6	42.2	....	....	....	....	....	C	T	....	Strm	Bosch	Opt	.....	Own	...	Own	W	Timk	168	Mer	36x6	40x6†	Ross	Mon	.....
Tiffin 6-Ton	9000	5200	Cont	6	3¾x5¼	33.7	3	3/16	L	C	T	T	FS	Rayf	Bosch	West	D	Covt	3	Acme	W	Shel	168	Kal	36x6	40x12	Ross	.....	80
Winther 126	9000	5250	Wis	4	5⅛x6	42	3	¼	T	C	T	T	G	Mas	Eism	Bij	B	B-Li	4	Bld	I	Cl	162	Math	36x6	40x6	Ross	Dup	80
Winther 149	9600	5500	Wis	4	5⅛x6	42	3	¼	T	C	T	T	G	Mas	Eism	Bij	B	B-Li	4	Bld	I	Cl	162	Math	36x6	40x14	Ross	Dup	80
Couple Gear 6	11000	7200	Wis	4	5¼x7	44.1	4	1/16	T	G	H	Fo	Strm	Eism	Own	.....	Own	75	Own	Own	Own	144	Tut	36x5†	36x6	Own	.....	65
Mack 7	10950	5500	Own	4	5 x6	40	2	....	L	C	T	FS	Strm	Dix	.....	D	D-Sea	3	.....	C	Dead	Op	.....	36x7	40x7	.....	Own	.....

G. C. M. Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
5½, 6 and 7 Ton—Continued																												
Old Reliable CP	10240	6000	Wau	4	4¾x6¾	36.1	3	¼	L	C	T	FS	Strm	Bosch	.....	D	Selec	4	Spic	C	Shel	124	Shel	36x6	40x7†	Ross	Wau	.....
Royal 7	....	....	Wis	4	5¼x7	44.2	....	....	....	C	T	.....	Strm	Bosch	Opt	.....	Own	...	.....	W	Timk	168	Mer	36x7	40x7†	Ross	Mon	.....
Wichita S	9200	5400	Beav	4	4½x6	32.4	3	¼	O	P	EM	C	Strm	.....	.....	C	Own	4	Own	.....	Own	165	.....	36x6	40x6†	Ross	Dup	.....
Gasoline Tractor-Trucks																												
Columbia T	4000	2350	Cont	4	4⅛x5¼	27.2	3	5/16	L	C	T	FS	Shk	Dix	.....	C	Covt	3	Spic	I	Russ	112	Per	36x4	36x6	Own	Pier	.....
Federal Light-Duty	4100	2500	Cont	4	4⅛x5¼	27.2	3	5/16	L	C	T	Sp	Zen	Eism	.....	B	Own	4	Spic	W	Timk	102	Math	36x3½	36x5	Gem	Mon	80
Federal Heavy-Duty	6800	3475	Cont	4	4½x5½	32.4	3	5/16	L	C	T	Sp	Zen	Eism	.....	B	Own	4	Spic	W	Timk	108	Math	36x5	36x5†	Gem	Mon	80
Garford 70T	4750	3400	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Sp	Rayf	Spld	.....	L	Selec	4	Spic	W	Timk	119	Per	36x4	36x7	Ross	Simp	.....
Garford 77T	6990	4400	Wis	4	4¾x5½	36.1	3	¼	T	C	T	Fo	Rayf	Eism	.....	L	Selec	4	Spic	W	Timk	105	Per	36x5	40x5†	Ross	Simp	.....
Garford 68T	8450	5100	Wis	4	5.1x5½	41.5	3	¼	T	C	T	Fo	Rayf	Eism	.....	L	Selec	4	Spic	C	Dead	102	Per	36x6	40x6†	Ross	Simp	.....
Hewitt-Ludlow 6-Ton	4000	2950	Buda	4	4¼x5½	28.9	....	....	....	....	T	Fo	Strm	Bosch	.....	B	.....	...	Spic	C	.....	...	.....	36x4	36x4†	Lav	.....	.....
Hood	2900	1300	Own	4	3¾x3¾	22.5	3	¼	T	T	C	Sp	Holl	.....	.....	D	Plan	2	Own	C	Own	60	Lah	20x3½	20x5	Own	.....	65
Knox 35	8500	5500	Own	4	5 x5½	40	4	¼	O	C	Fed	Fo	Zen	Mag	.....	D	Selec	3	.....	C	Timk	108	.....	36x4	38x6†	Ross	.....	.....
Knox 36 3-Ton	10000	6000	Own	4	5 x5½	40	4	¼	O	C	Fed	Fo	Zen	Mag	.....	D	Selec	3	.....	C	Timk	108	.....	36x4	38x6†	Ross	.....	.....
Koehler 3-Ton	3000	1750	Own	4	3½x5	19.6	3	5/16	O	T	T	FS	Strm	Eism	.....	D	MM	3	K-B	.....	Torb	106	.....	34x3	34x5	Own	Mon	.....
Koehler 5-Ton	3900	2165	Own	4	3½x5	19.6	3	5/16	O	T	T	FS	Strm	Eism	.....	D	MM	3	K-B	.....	Torb	106	.....	34x4	34x6	Own	Mon	.....
Kuhn	9000	5000	Wis	4	4¼x5½	28.9	3	5/16	T	C	H	Sp	Rayf	Bosch	.....	C	Selec	4	.....	B	Own	138	.....	36x7	36x7	.....	.....	55
Lapeer (3-Ton)	3050	2000	Wau	4	3½x5¼	19.6	3	¼	L	P	.....	FS	.....	Mag	.....	D	Selec	3	.....	I	Torb	88	.....	34x3½	34x5	Ross	.....	.....
Lapeer (5-Ton)	3400	2700	Wau	4	4 x5¾	25.6	.....	.....	L	P	.....	FS	.....	Mag	.....	D	Selec	3	.....	I	Torb	88	.....	34x3½	34x3½†	Ross	.....	.....
Lombard	8000	....	Spec	6	5½x6¾	72.7	....	....	....	C	Spec	Fo	Sheb	.....	Spec	D	Spec	...	.....	W	.....	...	.....	.....	.....	Ross	.....	90
Mack AB (5-Ton)	4900	3100	Own	4	4 x5	25.6	3	....	L	C	H	FS	Strm	Dix	.....	D	Selec	4	.....	C	Dead	120	.....	36x4	36x4†	.....	Own	47
Mack AC (7-Ton)	7670	4600	Own	4	5 x6	40	2	....	L	C	H	FS	Strm	Dix	.....	D	Selec	3	.....	C	Dead	119	.....	36x5	40x5†	.....	Own	45
Mack AC (11-Ton)	8250	5200	Own	4	5 x6	40	2	....	L	C	H	FS	Strm	Dix	.....	D	Selec	3	.....	C	Dead	119	.....	36x7	40x7†	.....	Own	50
Mack AC (15-Ton)	8650	5500	Own	4	5 x6	40	2	....	L	C	H	FS	Strm	Dix	.....	D	Selec	3	.....	C	Dead	119	.....	36x7	40x7†	.....	Own	50
Rennoc 8-Ton	5050	2850	Buda	4	4⅛x5½	27.2	3	¼	L	C	T	Fo	Strm	Spld	.....	D	Warn	4	Hart	W	Wis	116	Row	36x5	36x7	Lav	Pier	60
Ross E 3-Ton	3800	1850	Own	4	4⅛x6	28.9	3	¼	L	P	T	Fo	.....	Mag	.....	C	Selec	3	Own	W	Own	144	Tut	.....	.....	Ross	Own	.....
Walter 4-Wheel Drive	8500	5500	Own	4	4½x6½	32.4	4	¼	L	C	T	Fo	Zen	Eism	West	W	Selec	4	Own	I	Dead	140	Math	40x6	40x6†	.....	Own	60
Watson	6500	4050	Cont	4	4½x5½	32.4	3	5/16	L	C	Jam	FS	Zen	Bosch	.....	L	B-Li	4	Spic	W	Timk	80	Shel	34x4	36x5†	Gem	Pier	37

E.C.M. Name and Model Number	Carrying Capacity	Chassis Weight	Chassis Price	Maximum Speed	Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Springs	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent Weight on Rear Wheels
Electric Commercial Cars																	
Ward WS	750	1400	.....	12	Edis	45	West	West	4	B	Timk	Shel	32x2½	32x3	Own	88	60
C. T. 1	1000	1800	2270	14	Opt	60	G-E	Own	4	Ct	Flot	Shel	36x3	36x3	W	90	60
Walker M	1000	2300	.....	15	Opt	60	West	West	5	O	Own	Math	34x3	36x3½	Ross	93	66
Atlantic 1C	2000	2770	.....	12	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x4	Ross	103	65
Ward WA	1000	2730	.....	12	Edis	47	G-E	G-E	4	W	Shel	Shel	32x3	32x4	Own	90	60
C. T. 2	2000	2500	2745	13	Opt	60	G-E	Own	4	Ct	Flot	She.	36x3½	36x4	W	100	60
Walker K	2000	2500	.....	14	Opt	60	West	West	5	O	Own	Math	34x3½	36x4	Ross	96	66
Ward WB	2000	3420	.....	10	Edis	43	G-E	G-E	4	W	She.	She.	32x3½	36x4	Own	102	60
Atlantic 2C	4000	3590	.....	11	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x3†	Ross	115	65
C. T. 3	4000	3500	3270	11	Opt	60	G-E	Own	4	Ct	Flot	Shel	36x4	36x4†	W	116	60
Walker L	4000	3700	.....	13	Opt	60	West	West	5	O	Own	Math	38x4	38x6	Ross	112	66
Ward WD	4000	4500	.....	8.5	Edis	35	G-E	G-E	4	W	Shel	Shel	36x4	38x6	Own	114	60
Atlantic 3C	7000	5220	.....	10	Opt	.....	G-E	G-E	5	C	Timk	.....	36x5	40x4†	Ross	135	65
C. T. 4	7000	5000	4595	10	Opt	50	G-E	Own	4	I	Dead	Shel	36x3½†	36x4†	W	122	55
Ward WF	7000	6600	.....	7	Edis	30	G-E	G-E	4	W	Shel	Shel	36x5	36x8	Own	132	60
Atlantic 5C	10000	6230	.....	9	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x5†	Ross	144	65
Couple Gear	10000	9000	5800	10	Phil	30	Own	Own	5	B	Own	Tut	36x5†	36x5†	Own	96	55
Couple Gear	14000	10000	4800	7	Ppil	30	Own	Own	5	B	Timk	Tut	36x5†	36x5†	Own	96	75
C. T. 5	10000	6000	5240	8	Opt	50	G-E	Own	4	I	Dead	Shel	36x4	36x5†	W	132	55
Walker P	7000	5300	.....	11	Opt	50	West	West	5	O	Own	Math	36x5	38x5†	Ross	131	66
Walker N	10000	6300	.....	10	Opt	50	West	West	5	O	Own	Math	36x6	38x6	Ross	141	66
Ward WH	10000	8375	.....	6	Edis	26	G-E	G-E	4	W	Shel	Shel	36x7	40x10	Own	144	60
Couple Gear	14000	12000	5400	7	Phil	30	Own	Own	5	B	Timk	Tut	36x5	38x7	Own	194	75
Atlantic 6C	13000	6940	.....	8	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x6†	Ross	156	65
Couple Gear	14000	10000	6500	10	Phil	30	Own	Own	5	B	Own	Tut	36x5†	36x5†	Own	96	55

Manufacturers Whose Models Are Included in Specifications on Preceding Pages

Acason—Acason Motor Truck Co., Detroit, Mich.
Acme—Acme Motor Truck Co., Cadillac, Mich.
All-American—All-American Truck Co., Chicago, Ill.
Armleder—O. Armleder Co., Cincinnati, Ohio.
Atlantic—Atlantic Electric Vehicle Co., Newark, N. J.
Atlas—Martin Truck & Body Corp., York, Pa.
Atterbury—Atterbury Motor Car Co., Buffalo, N. Y.
Autocar—Autocar Co., Ardmore, Pa.
Available—Available Truck Co., Chicago, Ill.
Beck-Hawkeye—Beck-Hawkeye Motor Truck Wks., Cedar Rapids, Iowa.
Bessemer—Bessemer Motor Truck Co., Grove City, Pa.
Bethlehem—Bethlehem Motors Corp., Allentown, Pa.
Brinton—Brinton Motor Truck Co., Philadelphia, Pa.
Briscoe—Briscoe Motor Corp., Jackson, Mich.
Brockway—Brockway Motor Truck Co., Cortland, N. Y.
C. T.—Commercial Truck Co. of America, Philadelphia, Pa.
Chevrolet—Chevrolet Motor Co. of Mich., Flint, Mich.
Clydesdale—Clyde Cars Co., Clyde, Ohio.
Collier—Collier Motor Truck Co., Bellevue, Ohio.
Columbia—Columbia Motor Truck and Trailer Co., Pontiac, Mich.
Comet—Comet Automobile Co., 156 S. Water St., Decatur, Ill.
Commerce—Commerce Motor Car Co., Detroit, Mich.
Concord—Abbot-Downing Truck & Body Co., Concord, N. H.
Conestoga—Conestoga Motor Truck Co., Lancaster, Pa.
Corbitt—Corbitt Motor Truck Co., Henderson, N. C.
Corliss—Corliss Motor Truck Co., Corliss, Wis.
Couple Gear—Couple Gear Freight Wheel Co., Grand Rapids, Mich.
Dart—Dart Truck & Tractor Corp., Waterloo, Ia.
Day-Elder—Day-Elder Motors Corp., Newark, N. J.
Dearborn—Dearborn Truck Co., Chicago, Ill.
Defiance—Turnbull Motor Truck & Wagon Co., Defiance, Ohio.
DeKalb—DeKalb Wagon Co., DeKalb, Ill.
Denby—Denby Motor Truck Co., Detroit, Mich.
Diamond T—Diamond T Motor Car Co., Chicago, Ill.
Diehl—Diehl Motor Truck Works, Philadelphia, Pa.
Dispatch—Dispatch Motor Car Co., Minneapolis, Minn.
Doane—Doane Motor Truck Co., San Francisco, Cal.
Dodge—Dodge Bros., Detroit, Mich.
Dorris—Dorris Motor Car Co., St. Louis, Mo.
Douglas—Douglas Motors Corp., Omaha, Nebr.
Duplex—Duplex Truck Co., Lansing, Mich.
Ellsworth—Mills-Ellsworth Co., Keokuk, Ia.
F. W. D.—Four Wheel Drive Auto Co., Clintonville, Wis.
Fageol—Fageol Motors Co., Oakland, Cal.
Famous—Famous Trucks, Inc., St. Joseph, Mich.
Fargo—Fargo Motor Truck Co., Chicago, Ill.
Federal—Federal Motor Truck Co., Detroit, Mich.
Ford—Ford Motor Co., Highland Park, Mich.
Fulton—Fulton Motor Truck Co., Farmingdale, L. I., N. Y.
G. M. C.—General Motors Truck Co., Pontiac, Mich.
Gabriel—W. H. Gabriel Carriage & Wagon Co., Cleveland, Ohio.
Garford—Garford Motor Truck Co., Lima, Ohio.
Gary—Gary Motor Truck Co , Gary, Ind.
Gersix—Gersix Mfg. Co., Seattle, Wash.
Giant—Giant Truck Corp., Chicago Heights, Ill.
Gramm-Bernstein—Gramm-Bernstein Motor Truck Co., Lima, Ohio.
Grant—Grant Motor Car Corp.. Truck Division, Cleveland, Ohio.
Hahn—Hahn Motor Truck & Wagon Co., Hamburg, Pa.
Hall—Lewis-Hall Iron Works, Detroit, Mich.
Harvey—Harvey Motor Truck Co., Harvey, Ill.
Hawkeye—Hawkeye Truck Co., Sioux City, Ia.
Hendrickson—Hendrickson Motor Truck Co., Chicago, Ill.
Hewitt-Ludlow—Ralston Iron Works, San Francisco, Cal.
Higrade—Higrade Motors Co., Harbor Springs, Mich.
Hood—Hood Mfg. Co., Seattle, Wash.
Hoover—Hoover Wagon Co., York, Pa.
Huffman—Huffman Bros. Co., Elkhart, Ind.
Hurlburt—Hurlburt Motor Truck Co., New York, N. Y.
Independent—Independent Motor Co., Youngstown, Ohio.
Indiana—Indiana Truck Corp., Marion, Ind.
International—International Harvester Co., Chicago, Ill.
Jones—Jones Motor Car Co., Wichita, Kans.
Jumbo—Nelson Motor Truck Co., Saginaw, Mich.
Kankakee—Kankakee Automobile Co., Kankakee, Ill.
Kelly-Springfield—Kelly-Springfield Motor Truck Co., Springfield, Ohio.
Kimball—Kimball Motor Truck Co., Los Angeles, Cal.
Kissel—Kissel Motor Car Co., Hartford, Wis.
Knox—Knox Motors Co., Springfield, Mass.
Koehler—H. J. Koehler Motors Corp., Newark, N. J.
Kuhn—Kuhn Tractor Truck Co., Seattle, Washington.
Lane—Kalamazoo Motor Corp., Kalamazoo, Mich.
Lange—Lange Motor Truck Co., Pittsburgh, Pa.
Lapeer—Lapeer Tractor-Truck Co., Lapeer, Mich.
Larrabee-Deyo—Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y.
Lombard—Lombard Auto Tractor Truck Corp., New York, N. Y.
Luverne—Luverne Automobile Co., Luverne, Minn.
Maccar—Maccar Truck Co., Scranton, Pa.
Mack—International Motor Co., New York, N. Y.
Manly—O'Connell-Manly Truck Co., Waukegan, Ill.
Master—Master Trucks, Inc., Chicago, Ill.
Maxwell—Maxwell Motor Co., Inc., Detroit, Mich.
Menominee—Menominee Motor Truck Co., Menominee, Mich.
Minnesota—Minnesota Machinery & Foundry Co., Minneapolis, Minn.
Moore—Moore Motor Vehicle Co., Danville, Ill.
Moreland—Moreland Motor Truck Co., Los Angeles, Cal.
Muskegon—Muskegon Engine Co., Muskegon, Mich.
Myers—E. A. Myers Co., Pittsburgh, Pa.
Napoleon—Napoleon Motors Co., Traverse City, Mich.
Nash—Nash Motors Co., Kenosha, Wis.
Nelson-LeMoon—Nelson & Le Moon, Chicago, Ill.
Netco—New England Truck Co., Fitchburg, Mass.
Noble—Noble Motor Truck Co., Kendallville, Ind.
Norwalk—Norwalk Motor Car Co., Martinsburg, W. Va.
Northwestern—Starr Carriage Co., Seattle, Wash.
O. K.—Oklahoma Auto Mfg. Co., North Muskogee, Okla.
Ogden—Ogden Motor & Supply Co., Chicago, Ill.
Old Hickory—Kentucky Wagon Mfg. Co., Louisville, Ky.
Old Reliable—Old Reliable Motor Truck Co., Chicago, Ill.
Oneida—Oneida Motor Truck Co., Green Bay, Wis.
Oshkosh—Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.
Overland—Willys-Overland Co., Inc., Toledo, Ohio.
Packard—Packard Motor Car Co., Detroit, Mich.
Paige—Paige-Detroit Motor Car Co., Detroit, Mich.
Panhard—Panhard Motors Co., Grand Haven, Mich.
Parker—Parker Motor Truck Co., Milwaukee, Wis.
Patriot—Hebb Motors Co., Lincoln, Nebr.
Piedmont—Piedmont Motor Car Co., Inc., Lynchburg, Va.
Pierce-Arrow—Pierce-Arrow Motor Car Co., Buffalo, N. Y.
Rainier—Rainier Motor Corp., Flushing, L. I., N. Y.
Reliance—Reliance Motor Truck Co., Appleton, Wis.
Rennoc—Rennoc-Leslie Motor Co., Philadelphia, Pa.
Reo—Reo Motor Car Co., Lansing, Mich.
Republic—Republic Motor Truck Co., Inc., Alma, Mich.
Riker—Locomobile Co. of America, Bridgeport, Conn.
Rock Falls—Rock Falls Mfg. Co., Sterling, Ill.
Ross—Ross Motors, Ltd., Chicago, Ill.
Rowe—Rowe Motor Mfg. Co., Lancaster, Pa.
Royal—Royal Motor Truck of N. Y., New York, N. Y.
Sandow—Sandow Motor Truck Co., Chicago, Ill.
Sanford—Sanford Motor Truck Co., Syracuse, N. Y.
Schacht—G. A. Schacht Motor Truck Co., Cincinnati, Ohio.
Schwartz—Schwartz Motor Truck Co., Reading, Pa.
Selden—Selden Motor Vehicle Co., Rochester, N. Y.
Service—Service Motor Truck Co., Wabash, Ind.
Shaw—Walden W. Shaw Livery Co., Chicago, Ill.
Signal—Signal Motor Truck Co., Detroit, Mich.
Standard—Standard Motor Truck Co., Detroit, Mich.
Sterling—Sterling Motor Truck Co., Milwaukee, Wis.
Stewart—Stewart Motor Corp., Buffalo, N. Y.
Sullivan—Sullivan Motor Truck Corp., Rochester, N. Y.
Superior—Superior Motor Truck Co., Atlanta, Ga.
Texan—Texas Motor Car Asso., Fort Worth, Tex.
Tiffin—Tiffin Wagon Co., Tiffin, Ohio.
Titan—Titan Truck Co., Milwaukee, Wis.
Tower—Tower Motor Truck Co., Greenville, Mich.
Traffic—Traffic Motor Truck Corp., St. Louis, Mo.
Transport—Transport Truck Co., Mt. Pleasant, Mich.
Triangle—Triangle Motor Truck Co., St. Johns, Mich.
Twin City—Twin City Four Wheel Drive Co., Inc., St. Paul, Minn.
Union—Union Motor Truck Co., Bay City, Mich.
United—United Motors Co., Grand Rapids, Mich.
U. S.—United States Motor Truck Co., Cincinnati, Ohio.
Velie—Velie Motors Corp., Moline, Ill.
Victor—Victor Motor Truck & Trailer Co., Chicago, Ill.
Vim—Vim Motor Truck Co., Philadelphia, Pa.
Walker—Walker Vehicle Co., Chicago, Ill.
Ward—Ward Motor Vehicle Co., Mt. Vernon, N. Y.
Ward La France—Ward La France Truck Co., Inc., Elmira, N. Y.
Walter—Walter Motor Truck Co., New York, N. Y.
Watson—Watson Wagon Co., Canastota, N. Y.
White—White Motor Co., Cleveland, Ohio.
White Hickory—White Hickory Wagon Mfg. Co., Atlanta, Ga.
Wichita—Wichita Falls Motor Co., Wichita Falls, Tex.
Wilcox—H. E. Wilcox Motor Co., Minneapolis, Minn.
Wilson—J. C. Wilson Co., Detroit, Mich.
Winther—Winther Motor Truck Co., Winthrop Harbor, Ill.
Witt Will—Witt-Will Co., Inc., Washington, D. C.
Wolverine—American Commercial Car Co., Detroit, Mich.

A Census of Automotive Manufactures

A census of automotive manufactures is to be taken by the Government in 1920 and will cover the operations of 1919. The remarkable development of the industry has made necessary a complete revision of the questionnaire used in 1915. One of the features which will be of interest to all those desiring information as to the distribution of automotive equipment will be the schedule of the agricultural census. Eugene F. Hartley is chief statistician in charge of automotive manufactures.

France to Drop Import Duty in 1920

It has been announced in Paris that, after the signing of the Peace Treaty, France will adopt a 45 per cent. duty on automobiles of American make. This rate will be effective until January, 1920, at which time the duty will become 15 per cent.

Kimble-Hislop Co., 1622 Cuming St., Omaha, Neb., announces the opening of a new jobbing business. A complete line of accessories and new parts of standard units will be handled.

Rounding Up Promoters of Spurious Stocks

NEW YORK, May 18.—District Attorney Swann, of this city, is conducting an investigation, which promises to end in the arrest and conviction of certain "wildcat" promoters and free-lance brokers. These promoters have been floating spurious automobile and oil stocks. Under the present system of curb selling, bogus stock flotations have been rendered comparatively easy, and a parent standing is given to utterly worthless securities.

EFFICIENT REPAIR METHODS

Editor's Note: This department is conducted primarily for the new repairman and dealer; also the repairman in the smaller towns who is anxious to place his shop on a better paying basis and do his work in a more systematic manner. We shall appreciate any suggestions or criticism that will help us make this department satisfy your needs.

Overhauling the Power Plant of the Vim Truck

By C. P. SHATTUCK

THE following method of removing, overhauling and replacing the power plant of Vim trucks, types 20 and 21, is employed by the New York city factory branch of the Vim Motor Truck Company. The removal and overhaul of the clutch and rear axle of these types were discussed and illustrated in the March and April issues of THE COMMERCIAL CAR JOURNAL, and the specific instructions given for removing the clutch will be found useful in removing the engine from the frame, particularly the directions for disconnecting the propeller shaft, brake linkage, etc.

Uncoupling Control Linkage

Disconnect ball and socket joints of spark and throttle linkage at bottom of steering gear and **take out tie-rod of hood** by removing ⅜-in. nut at dash end of rod, and unscrewing rod from the radiator. To **remove radiator,** take off two nuts on studs extending from radiator and through cross member. **Displace fan assembly,** bracket of which is carried on a stud. **Take out floor boards** which are held by three 1½ x 1½-in. carriage bolts on either side. **Shut off fuel supply** and **disconnect fuel** at carburetor. **Disconnect clevis pin,** left side of emergency brake at lever end, and **remove V nut of service brake** connection and pull rod out of lever. **Disconnect front universal joint,** allowing propeller shaft to drop to floor.

Note: Instructions for this work were given in the March issue as previously mentioned.

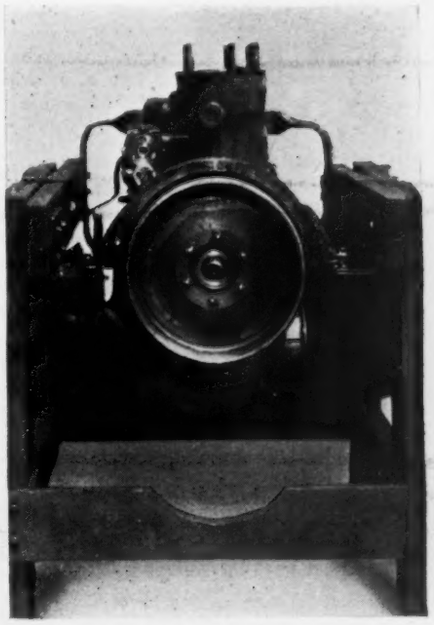
Disconnecting Engine

Lift off dash and windshield as a unit. It is secured by three 1 x ½-in. stove bolts on each side of the frame. Remove the two 2½ x ¾-in. S. A. E. bolts securing rear engine supports to frame. **Disconnect exhaust manifold** from exhaust pipe, then remove the two 7-16-in. nuts which secure the exhaust manifold to the cylinder block. **Take out hot air connection** from carburetor and also remove this hot air pipe where it joins the exhaust manifold. The exhaust manifold may now be removed. To **remove the front dirt pan,** take out four 1 x 3-16 in. bolts. **Free front support of engine** retained by a collar which is secured by two nuts and bolts, and remove the collar. The engine and transmission as a unit is now ready for lifting out of the frame into the engine stand.

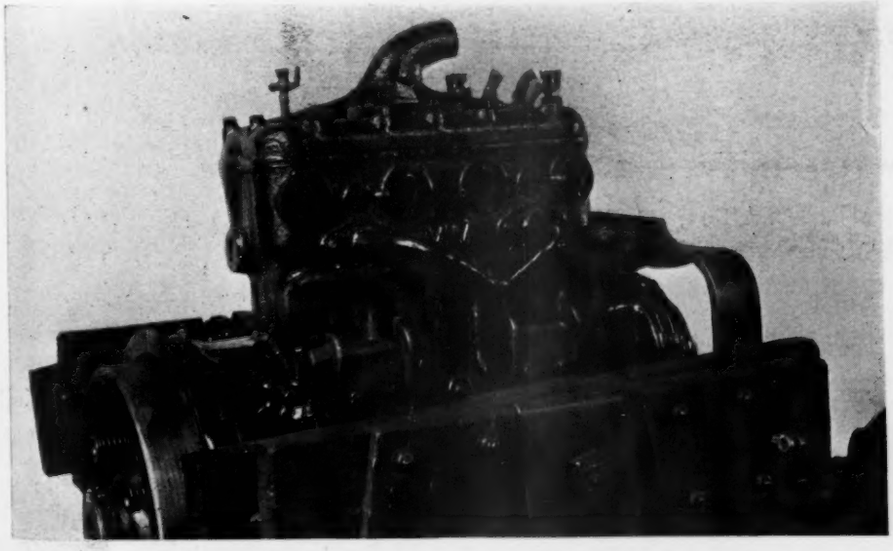
Note: A factory type of stand was described and illustrated in March issue.

Stripping the Engine

With the engine in stand, **drain oil** by removing plug on lower left hand corner of the crankcase, looking from the clutch end. **Remove brake and clutch pedals.** These slip on and are locked by a cotter pin. **Remove clutch equalizing bar,** which has a 1¼ x ⅜-in. bolt in center and bar can be lifted off. **Displace transmission housing** cap screws, six 1½ x ⅜ in., and slip off housing. This was fully described in the March issue. **Remove cylinder head.** This is retained by 15 studs that are 3 in. long, have 7-16 in. U. S. standard threads on one end and S. A. E. on other. Copper washers are utilized with nuts. **Take off cylinder head gasket.** (Copper-asbestos stock). **Remove valve plates,**



Showing Cylinder Head Displaced and Distributor Cap and Interrupter Cover of Magneto Removed and Ready for Timing the Magneto



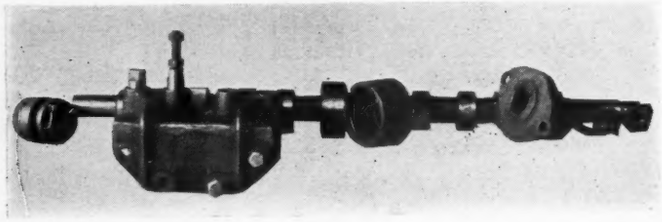
Right-Hand View of Vim Engine, Showing Oil Pump, Valve Plates Removed to Indicate Cap Screws, Retaining Valve Lifter Guide Brackets, and Exhaust Manifold and Fan Assembly Displaced

two, held by studs. (The studs are ⅜ x 4½ in.). A cork gasket is used between plates and cylinder.

Disassembling Engine

To **remove timing gear cover,** take out sixteen 1 x 5-16-in. cap screws. Removing four 1½ x ⅜-in. bolts will **free the magneto** which is connected to drive shaft by an Oldham coupling. **Displace carburetor and intake manifold intact** by removing cap screws, also displace gaskets. Reverse engine in stand and **disconnect oil line from crankcase to pump.** To **take off crankcase** remove sixteen 1 x 5-16-in. cap screws, and two 1½ x 5-16-in. bolts holding flywheel pan.

Reverse engine in stand, take out two cap screws and **remove oil pump.** The flywheel may be removed when desired,



Illustrating the Camshaft Assembly Also the Valve-Lifter Guide Bracket, Tappets and Retaining Cap-Screws Which Are Wired in the Assembly.

is retained by nuts and can be removed without a puller. With the engine in its normal operating position, **remove the valves** which is conventional work. To **remove the tappets,** cut the wire running through the heads of the cap screws and take out the screws, four to each assembly, 1 x ⅜ in.

Removing the Camshaft

The next step is to **take out the camshaft.** It has three bearings, bronze in cast iron backs, and each bearing is locked by a cap screw. The rear bearing on the same side of engine as the oil pump is held by a 1 5-16 x ¾-in. cap screw, and the center and front by 1 x ⅜-in. cap screw. The camshaft is removed or pulled out at the timing gear end and, as may be noted in the accompanying illustration, the gear A, camshaft gear, has four openings. The gear is turned until two of these openings expose two ⅜ x 1-in. cap screws. Displace these and pull shaft forward and out. **Care must be taken to remove all tappets before** taking out the camshaft. The gears can be removed without a puller. The rear camshaft bearing can be driven out after camshaft is removed, if necessary.

Reverse engine in stand and **disconnect and remove connecting rods** with pistons, saving and replacing shims on the two bolts of each rod. **Remove crankshaft** which has three bearings. The center bearing cap has two bolts, the rear and front four with felts. To **remove magneto shaft,** drive out No. 3 taper pin at coupling end and drive off coupling. **Remove fan pulley** which is locked by a 1½ x 5-16-in. bolt and nut.

Restoring Worn Components

The scraping in and adjusting bearings, grinding valves, testing fit of pistons in cylinders, etc., conventional work in the overhaul, has been described in the January and February issues. The piston pins in the Vim engine are of the fixed type and the renewal of bushings is a simple matter, as they come fitted for new piston pins. The camshaft bearings are similarly easily renewed as they come broached. The **adjusting of the timing gears** for noise, etc., is accomplished by movement of the two idler gears C and D (see illustration), which are mounted on studs, have a washer and are securely held in place by a castellated nut, cotter pinned.

Adjusting Timing Gears

To adjust these gears it will be necessary to adjust the lower idler gear C first, meshing it properly with the crankshaft gear B to the camshaft gear A at the same time. When this adjustment is accomplished then adjust the upper idler gear D, then mesh with the magneto gear E and the lower idler gear C. In making the adjustment of these gears the teeth should not mesh too deep. The best way to test these gears for the proper adjustment is to be able to place the gear on the idler bracket by a light tapping with the palm of the hand.

Note: In removing main bearing caps note the relative position of the oil grooves in bearing and cap end and replace in same order. **This is very important.**

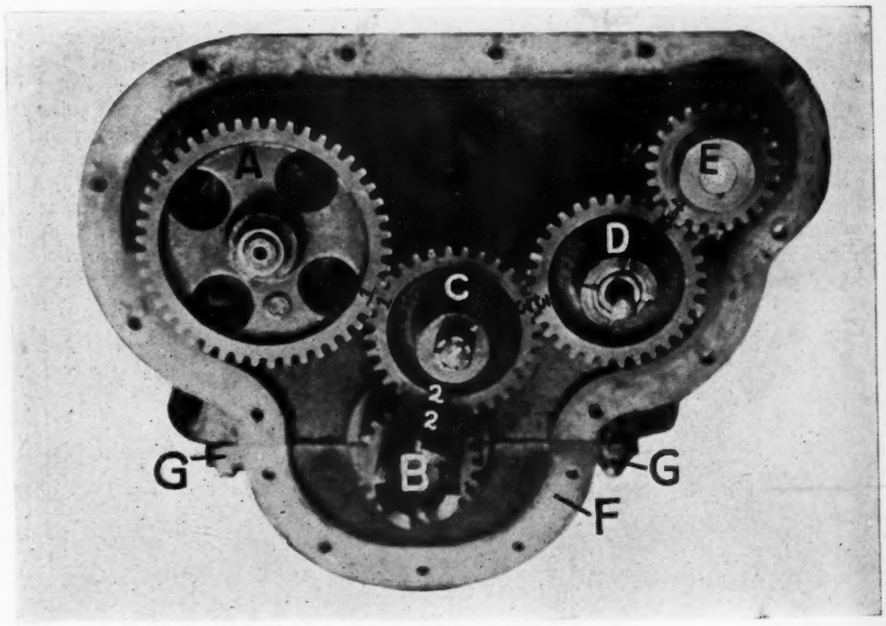
Reassembling Engine

To reassemble, reverse the order of taking down. To **time the magneto,** place the piston of the No. 1 cylinder on top dead center (end of compression stroke), and with the contact points of breaker just beginning to separate, connect magneto to driving member. When **renewing idler gear bushings** it may be essential to scrape these to a fit after reaming.

In **replacing the timing gear cover** shellac one side of the cork gasket, and place this side next to engine. Catch a few of the cap screws to align the gasket, then press gasket on. Grease exposed side of gasket to make easy removal of cover and without damaging the gasket. Before replacing the timing gear cover, back off on the adjusting nut for the magneto shaft, which is threaded into this cover. When the cover is bolted securely then adjust this screw, which acts to **take up the end play in the magneto shaft.** The magneto shaft should have a play of about .002 in.

Overhauling Oil Pump

The **overhaul of the oil pump,** the removal of which has been described, is not difficult. **Displace the coil springs** and test tension, replacing with new if necessary. Clean pump and check valves and reassemble. **Use new gaskets throughout** and before starting engine **fill timing gear case with one pint of oil** (access is by removing pipe plug in top of gear case cover) and **put six quarts in the crankcase,** which should bring the oil level in the crankcase to the oil level indicator which is located on the left-hand side. To determine the correct oil level, all that is necessary is to push down the plunger. Care must be taken not to have the oil level higher than described, as use of too much lubricant tends to foul the spark plugs and cause deposits of carbon on the piston heads, etc. To replace the power plant in the chassis, reverse the instructions contained in this article and those preceding it.

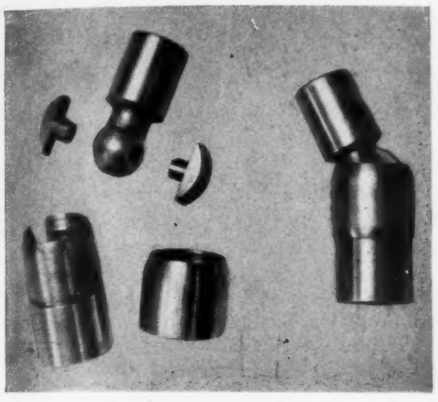


Showing the Timing Gear Cover Removed and Gears Lettered to Facilitate Replacement and Adjustment When Eliminating Noise, Etc.

TRUCK EQUIPMENT AND APPLIANCES

Ball and Socket Universal Joint

The Cooper Flexible Transmission Co., Inc., Eighth Ave. and Eighteenth St., Brooklyn, N. Y., is manufacturing the Cooper Universal Joint. This joint is of



The Cooper Universal Joint

the ball and socket type, modified by the addition of means for the rotative transmission of power from the ball to the socket. Side and end thrust are taken up by the ball in the socket. This takes the strain off the drivers, leaving them to perform their function of carrying power. The socket is slotted to receive the driver and the ball is drilled and reamed to receive the pins on the drivers. A casing, slipped over the outside of the socket, is permanently pressed in place into a groove provided for it. It serves to hold the parts of the joint together and forms a large oil reservoir.

The joint has but five parts and no screws, pins or bushings. All bearing surfaces are carbonized, hardened and ground—the hubs being left soft for drilling and reaming for taper pins or cutting keyways.

The Sternwear Inner Tube

The method of construction of Sternwear Reinforced Pneumatic Inner Tubes is calculated to prevent blow-outs and lessen punctures. The fabric layers extend to all friction parts of the casing and the tube is so designed as to afford expansion only of the part which is protected by the rim. Two layers of fabric are worked into these tubes, allowing expansion at the point where the fabric ends, but allowing no expansion on the side of the outer walls next to the tread.

The net prices of the Sternwear tubes range as follows, subject to change: 30 x 3 in., $8.70, up to the 37 x 5 in. size $25. These are manufactured by the Surety Tire & Rubber Co., St. Louis, Mo.

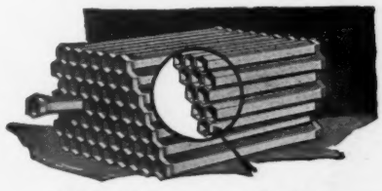
Fedders Honeycomb Radiator

Manufacture of the individual cellular tube radiator known as the "Genuine Honeycomb" type has been resumed by the Fedders Mfg. Co., Inc., of Buffalo. This is the only type the company made for a number of years and was in quite general use until supplanted a few years ago by another type that was less expensive to manufacture.

The Fedders company has succeeded in developing new and more economical methods of production, thus giving this radiator a larger and wider market.

The Genuine Honeycomb radiator is unique in design and construction, the core being built entirely of individual cellular tubes, hexagonal in cross section, and with expanded ends. These tubes are placed in a horizontal position and joined with solder at their expanded ends, forming circulating water spaces between all the tubes. Practically every bit of metal is in direct contact with water on one side and air on the other.

The design affords horizontal, diagonal and vertical circulation, and should any



Fedders Honeycomb Radiator

foreign substances get into the radiator in large enough size or quantity to fill the space between tubes, the stoppage is strictly localized and the circulation continues around the clogged area.

The radiator is claimed to withstand freezing because the water is everywhere in contact with flexible metal surfaces.

Each tube is firmly attached to the adjoining ones by the six flat surfaces at its expanded ends, instead of by thin line edges or points of contact, as is usually the case in radiator construction. Each tube is dipped in a special solder to eliminate the possibility of leakage from porous brass of corrosion.

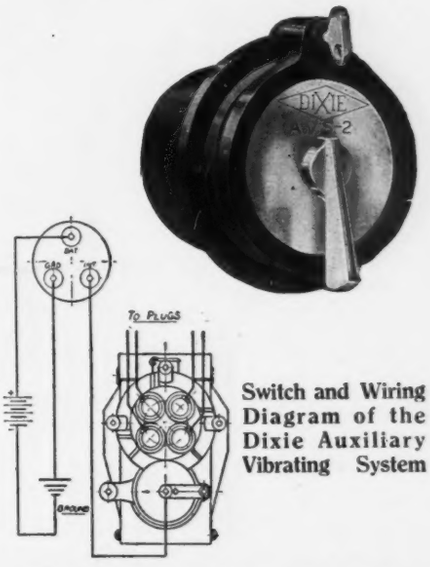
Another feature is the ease of repair. Any damaged tubes may be removed by melting the solder at each end, extracting the individual tubes and replacing with new ones. A pair of pliers and a soldering iron are the only tools necessary, and these repairs in no way impair the efficiency or the appearance of the radiator. Leakage may be temporarily stopped anywhere by merely plugging the ends of the damaged tubes with cork, wood or similar substances.

Dixie Auxiliary Vibrating System Aids in Starting Engine

The Splitdorf Electrical Co., of 98 Warren St., Newark, N. J., is manufacturing the Dixie Auxiliary Vibrating System, an outfit which permits the use of a battery in conjunction with a Dixie magneto, to assist in starting gasoline engines in cold weather or when cranked by hand. The outfit consists of a vibrator, two small windings and a condenser, all housed within the switching device. The battery current is carried through the vibrator to the circuit breaker of the magneto. The high tension current is distributed to the spark plugs through the distributor on the magneto. Letters, B, O and M on switch refer to Battery, Off and Magneto.

When the switch lever is on battery, current from the battery is conducted through the vibrator windings to the vibrator, thence to the magneto breaker and finally through the primary circuit of the magneto to the ground and back to the battery. The vibrator is set in operation simultaneously with the throwing of the switch on battery, but no sparks are produced at the plugs until the cam opens the platinum points, bringing the magneto primary winding into the circuit. A shower of sparks is made in the cylinder, which practically assures the explosion of an imperfect charge.

This system is made to operate with a battery of 6 volts. The contacts of the



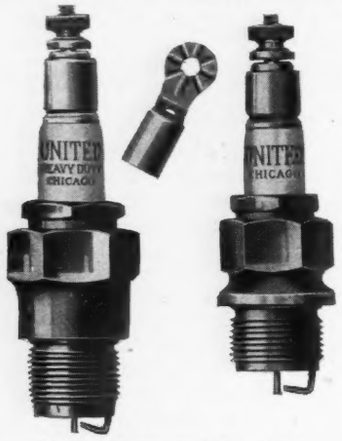
Switch and Wiring Diagram of the Dixie Auxiliary Vibrating System

switch are under spring tension and are self-cleaning.

The vibrator winding is mechanically assembled and is not affected by heat. No wax or insulating material is used to hold it in place.

United Spark Plugs and the Terminal Feature

The United Spark Plugs embody a feature which will be appreciated especially by tractor and truck users. It is the "Lockit" terminal. The construction of these terminals is simple. The spiral



United Plugs and Terminal

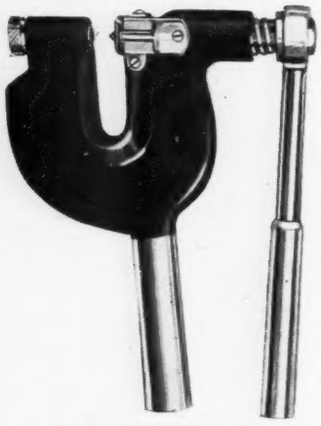
spring incased above the porcelain keeps the ribbed top of the plug tight against the ribs of the terminal clip. These ribs fit into grooves in the thumb screw and lock, forming a positive contact. This connection cannot be jarred loose and yet the thumb screw can be easily turned to disconnect the wire.

The United heavy duty spark plug is substantial and strong and is made especially to withstand the punishment received in truck and tractor service.

These plugs are made for all gasoline engines and are manuafctured by the United Mfg. and Distributing Co., Lake Shore Drive and Ohio Street, Chicago.

The "Jiffy" Punch

The Jiffy Punch is for tool kit or shop. It weighs 5 lb. and is 9½ in. long. It works in a small space; punches 5-32 in.,

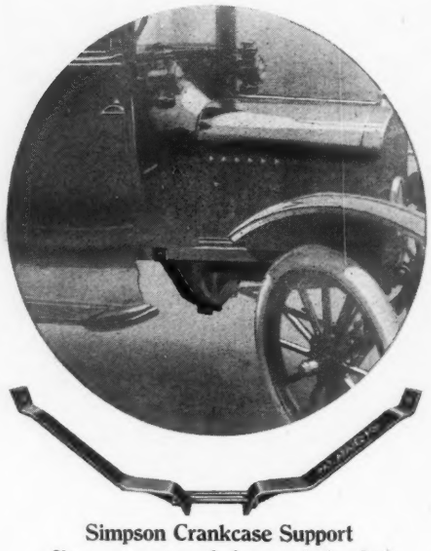


The "Jiffy" Punch

3-16 in., 7-32 in. and ¼ in. holes in metal up to 10 gage. Very little oiling is required and no adjusting. The illustration shows the deep throat and one-piece automatic disappearing stripper, which gives clear view to punch and punch mark for next operation. With the Jiffy it is possible to punch several sheets with one operation. It is claimed that the punch will not twist or turn in operation, that punch breakage is practically eliminated, and that it will not leave a burr on the metal. Jiffy punches are carefully tested and fully guaranteed by the maker, Paul W. Koch & Co., 19 South Wells St., Chicago, Ill.

Device to Support Crankcase

This support is constructed of ⅛-in. x 3-in. steel with angle reinforced by welding a steel angle piece in to prevent spreading or binding. The adjustment is made by tightening the two ⅜ x 5-in. double locked bolts at the lowest point in the crankcase. These bolts are placed in such a position as to permit of the crankcase's being drained without taking the arm off. It relieves the strain of the engine's vibrations upon the crankcase. It can be placed on car before or after crankcase arm is broken. When installed



Simpson Crankcase Support
Shown separate and also attached. It is made of 3 x ⅛-inch steel

after crankcase arm has been broken it reinforces the broken arm, supports the crankcase, and undoubtedly saves large repair bills, to say nothing of putting the car quickly in running order again. The support is made by the Simpson Garage & Machine Co., Newark, Ohio, and sells at $2.

Durability a Feature of Red Star Timer

One of the latest timers to appear on the market is the Red Star Timer for Fords. It is being marketed by the Auto Components, Inc., 56 E. Randolph St., Chicago, Ill.

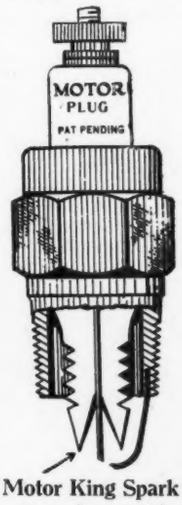
The shell of the timer is made of stamped steel, copper coated and nickel plated. It has a ball and socket spring oil cup; the control arm is made of stamped steel, spot-riveted and clamped to the shell. It will fit Ford engines on cars, trucks and tractors. The fibre race is made of best quality, bone-hard, natural colored fibre. It is set in the race accurately and held in position by indentations stamped in the shell. The contact shoes are carbon steel, mortised to smooth and highly polished surface. The motor assembly is of stamped steel, nickel plated. The contact roller revolves on a case hardened steel sleeve,

Red Star Timer for Fords

held tight by being frozen to rivet pin. The actuating spring of music wire controls the arm at hinge. The company's trade mark, Red Star, is stamped into each timer shell. The list price is $1.75.

The Motor King Spark Plug

The Motor Spark Plug Co., 97-107 Lafayette St., Newark, N. J., is the manufacturer of the Motor King Spark Plug. This spark plug has an insulator which is claimed to stand the heat well and to reveal by its color whether the mixture is rich or well-balanced. If the insulator is white the mixture is good and if black, the mixture is too rich. In the latter case this color is due to the fact that the plug does not get hot



The Motor King Spark Plug
This plug has an insulator which reveals by its color whether the mixture is rich or well balanced

enough to burn off the carbon. The insulators have a sharp edge, as shown by the arrow in the accompanying illustration. This edge projects into the combustion chamber and is claimed to burn the carbon deposit. No gaskets are used and cleaning is not often necessary.

The Universal Radiator Shutter Controls Passage of Air Through Radiator

The Metal Auto Parts Co., Des Moines, Ia., is manufacturing the Universal Radiator Shutter, a device to control the quantity of air passing through the radiator Shutter, a device to control the and has a number of movable shutters, carried in a frame of such size as to com-

The Universal Radiator Shutter

pletely fill the opening in the outer shell of the radiator. It is provided with a flange, which is snugly held between the outer shell and the core of the radiator. It is attached firmly and is made immovable without the use of a bolt or other fastening.

The blades or shutters are controlled from the steering column. When closed the air is completely shut off and when opened, the device does not interfere with the passage of the air. This device allows the engine to be warmed up quickly and makes possible a more economical adjustment of the carburetor. It can be furnished to fit practically any truck. The Ford size sells for $7.50; other models range in price from $9 to $18.

Perfection Roller Bearing

This bearing consists of a series of plain bearing rolls which revolve within a casing or box. These series of bearing rolls are held in alignment by alternating

The Perfection Roller Bearing

The series of bearing rolls are separated by smaller rolls to enable the bearing to withstand end thrust.

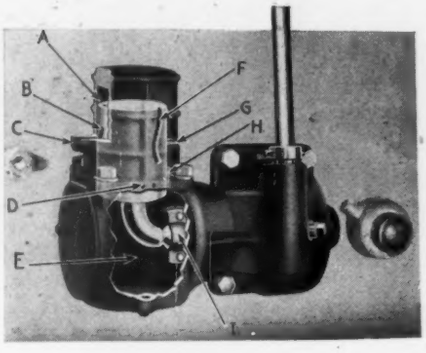
or separating rolls of a slightly smaller diameter. The rollers are from 1½ to 3 in. long, according to the length of bearing, and are placed end to end, separated by square-cut rings which form the raceway or tracks in which the rollers travel. The purpose of the divided rollers or series of rollers is to enable the bearing to withstand end thrust and to allow of flexibility in case the shaft on which the bearing is placed should spring slightly out of true.

When in operation the bearing rolls and their separating members roll upon each other's surfaces; there is practically no sliding contact, because pivots or axles have been eliminated throughout, and it is claimed that no lubricants are necessary as friction is practically eliminated. The Perfection Roller Bearing Co., 117 North Dearborn St., Chicago, Ill., is the manufacturer.

A Valveless Tire Pump

There are but three moving parts in the Rex Valveless Motor Driven Pump; the piston, the connecting-rod and the crankshaft. No valves are necessary because of the unique construction and motion of the piston. The illustration shows the simplicity of the pump's mechanism.

Upon rotating the crankshaft, the piston is given an oscillating and reciprocating motion by means of ball and socket



The Rex Tire Pump

This pump has no valves and but three moving parts

joint I. The oscillating of the piston opens and closes the intake and outlet pools G and C at the proper time, doing away with complication of leaky valves, springs and outer small parts. When the piston is up, air is permitted to enter through part D in chamber E, where it is compressed to 10 lb. pressure on the down stroke of piston. At the same time a vacuum is created in the cylinder, into which air is admitted upon contact of groove F with the intake part G. Groove F is then connected with groove H which admits the compressed air in lower chamber, into the cylinder for preliminary compression. On the up stroke of the piston the air in the cylinder is compressed until groove B comes into connection with outlet part C at the instant the compressed air is forced through hole A, which is connected with groove B, and then out through port hole C.

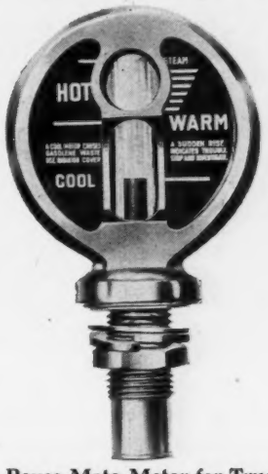
The price complete is $18. The maker is the Rex Machine Co., 3201 Shields Ave., Chicago, Ill.

Truck and Tractor Boyce Moto-Meter Model Announced

The Moto-Meter Company, Inc., of Long Island City, N. Y., is offering to the trade a new Boyce Moto-Meter, the Truck and Tractor model.

It is designed for hard usage such as is inevitable on such vehicles.

The diameter of the thermometer tube is ½ in., which makes breakage prac-



The Boyce Moto-Meter for Trucks and Tractors

tically impossible. The frame of the instrument is very substantial, and the thermometer tube thoroughly protected. The casing is nickel plated, and the tube has a broad red column of indicating liquid easily visible.

The Hudson One-Piece Slip-in Auxiliary Radius Rod for Fords

A quick attachable radius rod for the Ford car has been announced by the Hudson Motor Specialties Co., 1932 Arch St., Philadelphia. This new fitment sells for $2.50. It is one piece, of ¾-in. stock, designed to relieve strain. It stiffens the steering gear and eliminates steering post vibration when hitting ruts. It gives slightly and will not punch holes in the crankcase. It can be attached to any Ford car immediately or when the original radius rod becomes bent. In attaching it is necessary to remove the two nuts from the bottom of the perch posts

Hudson Slip-in Auxiliary Radius Rod

This device is slipped into the crotch of the Ford radius rod and held by the nut from the bottom of the perch posts.

and insert this auxiliary arm in the crotch of the Ford radius rod. The nuts are replaced and tightened.

Shurnuff Spark Plug

A spark plug with a patented air intake which introduces air into the cylinder at each downward stroke of the piston is being manufactured by the Shurnuff Mfg. Co., of 3147 Locust St., St. Louis, Mo. A ball valve prevents the escape of compression on the upward

The Shurnuff Spark Plug
This spark plug has an air intake which introduces air into the cylinder at each downward stroke of the piston

stroke. The air which enters the plug breaks up the gas pocket which forms above the firing point. The maker states that it is the free oil in this unconsumed mixture that forms on the porcelain, attracts free particles of carbon, and the heat making a hardened mass which encircles the porcelain, causes many other plugs to foul. The additional oxygen is introduced into the cylinder, producing a more perfect mixture. Thus the present low grade of gasoline is consumed more completely. The result is more direct firing, more power, more mileage and less carbon deposit on valves, piston head and cylinder walls.

The Shurnuff Spark Plug can also be used to advantage in truck, aeroplane, marine tractor and stationary engines. It sells for $1.50.

Horizontal Type of Orem Dust-Eter

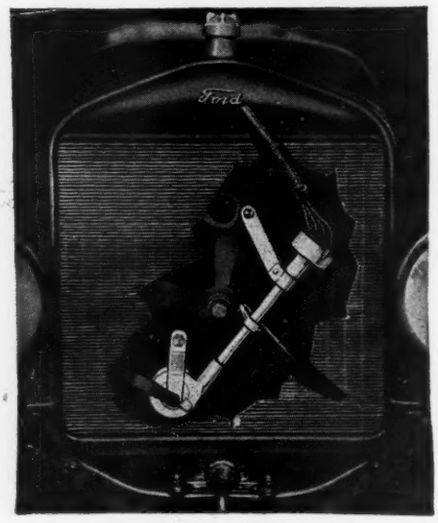
The Autosales Corp., of Kresge Bldg., Detroit, Mich., is marketing the Orem Dust-Eter, a device designed to keep the dust from passing through into the engine and doing damage.

The Orem Dust-Eter
This is known as the horizontal type, Model 133H

The horizontal type is illustrated herewith. It is 6 x 12 in., and is fully adequate for carburetors with up to 2-in. air intake opening. The air enters through the apertures at the bottom of the cleaner. The remainder of the dust, it is claimed, is intercepted at the outer surface of the felt, the vibration assisting its fall. The dust slips out through the bottom aperture. This model can be used where the air is not preheated or where a hot spot manifold is used. Connections are so designed that the carburetor receives all its air through flexible tubing from the Dust-Eter.

A New Timing System for Ford Cars

The Mill City Co., 823 Plymouth Bldg., Minneapolis, has placed on the market a new timing system for the Ford car. This system places the timer high and



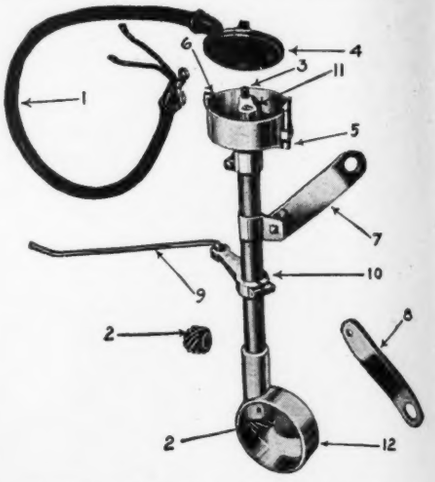
Portion of the Radiator Cut Away to Show Position of the Mill City Outfit

dry out of grease, dirt and oil, and makes its parts readily accessible. It is driven by the steel helical cut gear, as shown in one of the accompanying illustrations. This gear is fastened to the present Ford timing gear and drives the helical gear and the timer shaft of this outfit.

The contacts in this timer consist of a copper gauze brush held to contact by a small coil spring. The points are brushed clean and protected in a water and oil proof case. Parts of the timer are accessible for inspection, by removal of the cover. The brush may be removed to protect it from theft while the car is standing. The gear case is machined oil tight, allowing the removal of the felt washer on the camshaft, so that the constant splash of oil from the engine to the gears thoroughly lubricates them. The outfit is sold completely assembled and packed ready to install, with full directions. The price is $9.75 f.o.b. Minneapolis.

Referring to the illustration with the numerals, the parts are as follows:

1 Armored cable which has four different colored wires. 2 Is one of the helical cut gears. 3 Copper brush. 4 Contact points and cap which has the terminals numbered in addition to the wires being of different colors. 5 Is a special snap for facilitating removal of the cap. 5 and 6 together provide positive points for holding the cap in the proper location. 7 The upper bracket to be attached to

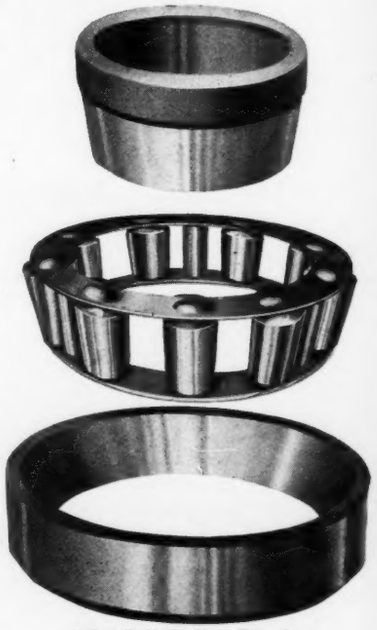


Complete Mill City Outfit Disassembled

the upper radiator connection. 8 Heavy spring steel clamp for holding the timer rigid. 9 A rod for advancing the spark. 10 Screw for adjusting lever. 11 Adjusting screw for setting the distributor arm. 12 Oil proof case which clamps over the old timer location.

"Se-Co" Roller Bearings

The accompanying illustration shows the Se-Co roller bearings for the front wheels of Ford cars. The rollers have convex ends which are held in concave sockets in the roller races. By this method a one-point contact of roller in the



"Se-Co" Roller Bearing

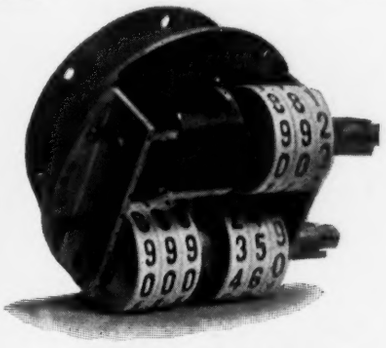
cage is obtained, friction thereby being reduced. It is claimed that due to accuracy in machining, these bearings are noiseless.

Se-Co Roller Bearings are made by the Stacks Engineering Co., 216-20 West Ontario St., Chicago, Ill.

The Vacuumeter

This is an automatic device for measuring the amount of liquid fuel consumed by a combustion engine. The meter gives three odometer readings. The first shows in gallons and tenths of a gallon, the amount of fuel consumed on a given trip; the second the total number of gallons consumed, and the third in gallons and tenths of a gallon, the amount of fuel remaining in the tank.

The illustration shows the window marked "Vacuum," which changes from



Vacuumeter Mechanism

Which records the fuel consumption, thereby furnishing figures to determine the mileage per gallon.

white to red, signalling that the entire vacuum system is in working order. The device enables the owner to discover when the truck is being used without his knowledge, as it cannot be operated without the fuel consumption being registered. The price of the Vacuumeter is $15. It is made by the Vacuumeter Co., Columbus, Ga.

H-B Tool Post Grinder

The Hamilton-Beach Mfg. Co., of Racine, Wis., is the maker of a tool post grinder which, it claims, solves many grinding problems. It is compact and convenient, and is built of excellent material.

Every Hamilton-Beach motor is carefully adjusted before leaving the factory.

The Hamilton-Beach Tool Post Grinder

It is wound for both direct and alternating currents, 100-120 volts, 25 to 60 cycles. The universal joint is perfectly fitted and true in operation. The dust-proof bearing caps are worthy of note. No grit or dirt can come in contact with the high speed, nickel babbitt bearings. Price, $25.

National Auto Wheels Corp., Wausau, Wis., is in process of reorganization. The company expects to erect a number of factories throughout the country for the production of National Resilient Wheels.

The Milwaukee Timer for Ford Cars

A replacement timer for use on the Ford car has been added to the Milwaukee line of automobile products. The

The Milwaukee Timer for Fords

special method of fitting and finishing the race and roller is said to give precise ignition at all speeds, and to improve the general operation of the engine. The case is a one-piece steel stamping, nickel over a coat of copper. Insulation is cared for by a wide, deep bone fibre ring fitted into the shell, and the method of embedding the contacts in the fibre ring is unique. The contacts are high-grade, cold-rolled steel, welded to the screw stud, insuring a perfect joint. The grooves are machine-cut into the fibre ring, into which the contacts are fitted, thus making them practically integral parts of the fibre ring. The fibre and contacts are carefully machined and finished, as is the brush assembly. The rollers are of high-carbon tool steel, machined, hardened, ground and polished. This timer has a self-locking oil cup, making it easy to apply a lubricant. It can be installed without replacing or removing any of the Ford parts. It will fit the Fordson tractor.

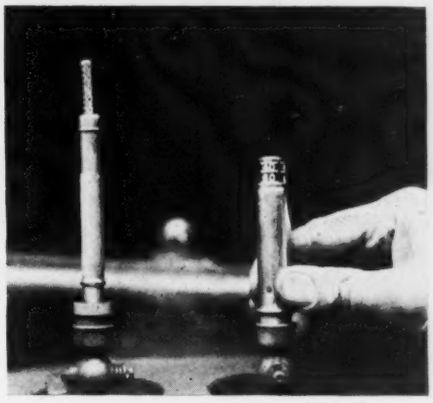
The Chicago A. E. Timer

A timer for Ford cars is being manufactured by the Chicago Automotive Engineering Corp., of 334 N. Irving Ave., Chicago, Ill. The contact points are protected, reducing the danger of short circuiting and the circumference of the commutator, being about half the usual size, the roller travels at approximately half the usual speed. This timer is well finished and sells for $2 complete.

The Chicago A. E. Timer for Ford Cars

Compression Tester Attachment

H. A. R. Peterman, 627 Oakdale Ave., Chicago, has introduced the Peterman Compression Tester Attachment for reading compression of the cylinders, thereby locating valve leaks or weak cylinders, piston ring trouble, etc. This device can easily be detached or attached to the two tire gages mentioned, the Twitchell and Schrader. The price is $.50.

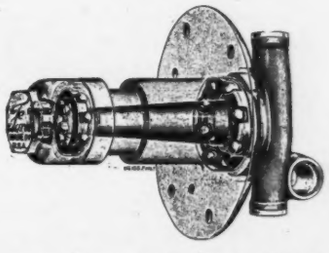


The Peterman Compression Tester Attachment

The attachment is made of two brass parts. A brass stud countersunk on top for air-tight gasket, 41-64 in., with a special thread to fit the inside thread of Schrader gage. The second part is a brass knurled nut to fit special thread on the stud to be used with the Twitchell gage only. This nut has a special grooved top to fit the bottom flange of the Twitchell gage. A rubber ball-shaped portion fits over the stem of the brass stud and fits any priming cup, or if desired a larger ball can be used to take the compression reading through the spark plug hole.

Goodrich National Ball Retainer

It is claimed that with the Goodrich National Ball Retainer and Separator installed in the Ford car, the balls in the

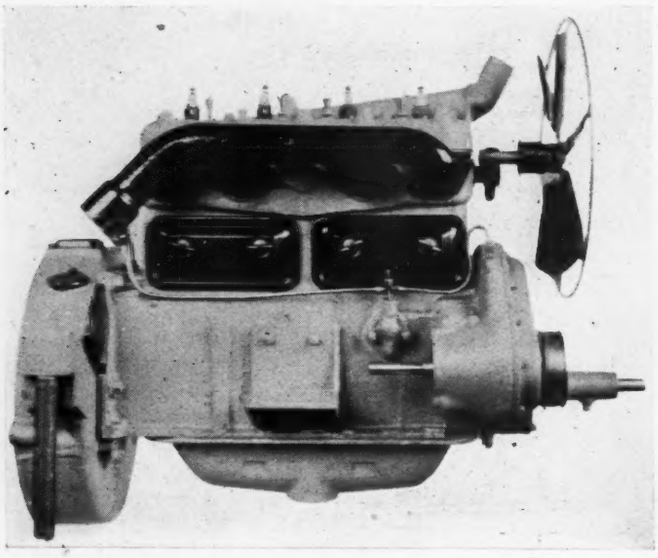


Phantom View of the Goodrich National Ball Retainer Installed

front axle bearings cannot run loose, climb the cone, and break, when bumps and ruts are hit. The company claims also that they will run indefinitely without adjustment. The illustration shows the retainer and its commendable features. Goodrich-Lenhart Mfg. Co., Widener Bldg., Philadelphia, is the maker. The price of a set of four, including the balls, is $2.50. The retainers are guaranteed to fit Ford front wheels perfectly.

The Buffalo Truck Engine

A new truck engine has been brought out by the Buffalo Gasoline Motor Co., of 1280 Niagara St., Buffalo, N. Y. It is manufactured in two models, known as a CA 4 x 5 in. and a BA 4½ x 5 in. These have a rating respectively of 25.6 and 19.6 hp. The general dimensions of the engine are the same. These engines have ample size bearings, are well balanced and smooth running. They have removable cylinder heads and splash lubrication. Provision is made for installing any standard system of ignition. The engine can be interchanged with almost any standard truck engine.



The New Buffalo Truck Engine Can be Operated on Gasoline or Kerosene.

General details are as follows: The engine is a four-cylinder, cast in block, L-head with separately cast cylinder head. The normal r.p.m. of the engine is 1400 and the weight of the engine is 530 to 540 lb.; the governor is a Monarch; the method of suspension is three-point.

The carburetor size is 1-in. on the Type BA and 1¼-in. on Type CA; cooling is by thermo-syphon or centrifugal pump; the water inlet and outlet diameter is for 2-in. I. D. hose. The pistons have three rings each which are 3-16-in.; the spark plugs used are ½-in.; inlet and exhaust valves are 1 15-16 in.; the wrist pin diameter is 1.092 in.; the three crankshaft bearings 2¼ in.; the camshaft diameter at the bearings is 2 5-16 in.; the crankcase is of cast iron.

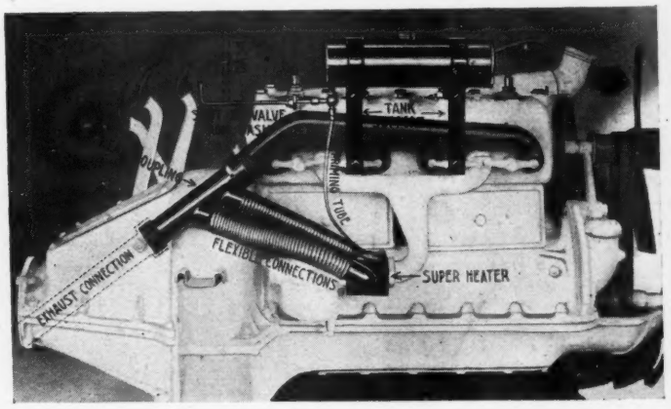
This engine can be operated on gasoline or kerosene—the overall length is 40⅜ in., the width 25¾ in. and the height 31½ in. A base support is provided for an electrical equipment.

An Outfit for Operating a Truck on Kerosene

The Ker-O-Gas machine for Ford cars, announced by the Midwest Sales Co., 422 Reserve Bank Bldg., Kansas City, Mo., permits the use of kerosene, distillate, etc., in automobile engines. The outfit sells for $15.

It consists of a super-heating unit that is placed between the carburetor and the intake manifold. The heat coupling unit is placed between the exhaust manifold and the exhaust pipe. A dividing wall in it directs the flow of the hot exhaust gases through flexible tubing, to the super-heater, which is attached to the intake manifold. After passing through this super-heating unit, the exhaust gases are returned to the exhaust pipe and pass out in the usual manner. In the super-heating unit there are two chambers, one for the passage and circulation of the exhaust gases or heat, the other for the passage of fuel from the carburetor. The heating of the mixture is claimed to convert the fuel into a more nearly combustible gas, which produces a good explosion, reduces carbon and develops greatly increased horsepower and mileage.

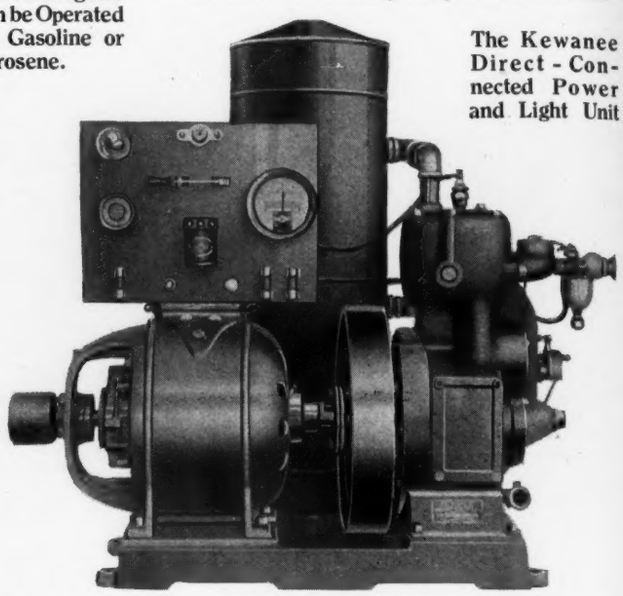
This outfit is made especially for low gravity fuel. The priming system consists of a small tank for gasoline, mounted above the engine, as shown, a fuel pipe to the heater, and a control rod. When the engine is cold, about a tablespoonful of gasoline is injected into the heater. After the engine is started, the gasoline is shut off from the dash and the engine operates on the fuel coming from the carburetor. It is unnecessary to use this priming system when the engine is hot or warm.



The Ker-O-Gas Machine for Use in Ford Cars.

New Kewanee Power and Light Unit

The latest addition to the Kewanee line of power and lighting units is the direct connected outfit illustrated herewith. The engine is a 3-hp. and is distinctly of the automobile type. The generator will develop 1500 watts and is ball bearing and equipped with a pulley to transmit the engine power to other machinery. The generator is compound wound for starting duty only, which gives it sufficient starting torque with less current consumption from the batteries. It is shunt wound for running duty which is the proper type for battery charging.



The Kewanee Direct-Connected Power and Light Unit

This plant is self-starting and is equipped with all necessary instruments, including field rheostats. It is furnished with batteries of both 30- and 110-volt type, also with 30-volt Edison battery.

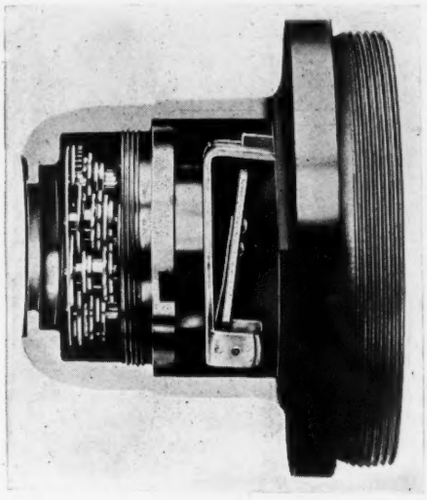
In connection with this unit and mounted on the same cast iron base, this concern will connect to the generator shaft, worm gear driven pumps of both suction and deep well type, ranging in capacity from 250 to 500 gal. per hr. These pumps may be disconnected from the generator pulley by means of a flexible coupling. Both the generator and the pump can be operated at the same time and a belt will operate other light machinery if desired. The batteries are of the sealed glass jar type.

The engine is single cylinder, 3-in. bore, 4-in. stroke, four-cycle. The cylinder is water cooled and it, together with the crankcase and base, are cast in one piece. It has a governor. Valves are mechanically operated and annular ball bearings are used. This engine will operate on either gasoline or kerosene. The bearings and moving parts of the engine are lubricated automatically.

New Hub Odometer Drive

The American Taximeter Company, 18 West 61st St., New York, N. Y., has just developed a novel method of driving a hub odometer. The new Dreadnaught Indestructible Hub Odometer is supplied with an automatic drive.

Instead of connecting the recording mechanism to the axle by a pin, the new Dreadnaught is provided with a stout steel finger which engages in the castellations of the axle nut. This finger is held firmly in place by means of a heavy, flat spring, firmly riveted. This eliminates all fitting—the new Dreadnaught goes on like a hub cap; the driving finger snaps into its place in the nut. To care for those few axles which are fitted with flat nuts, a special slotted nut is supplied.



Dreadnaught Indestructible Hub Odometer

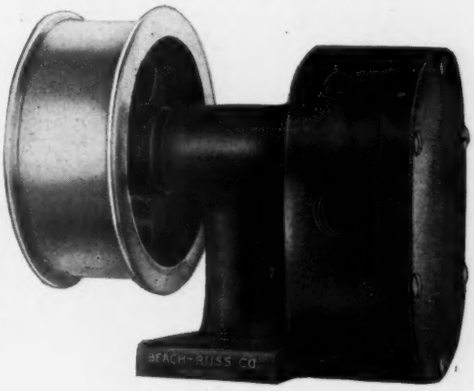
The Dreadnaught is guaranteed for the life of the truck against seepage of grease or damage from collision. The figures on the mileage record keep in one position, making it easy to read. It records all mileage forward or backward.

A special model has been developed for use on Fords. This can be attached by simply removing the old hub cap and screwing the Dreadnaught on in its place.

The Beach-Russ Gear Pump

The Beach-Russ Gear Pump is designed for handling oil and liquids. It is made of either brass or iron. It takes up little room, and though simple, is scientifically constructed and efficient. The interior of the pump has two meshed gears, and the extra long bearing means long life to the pump, and less danger of the gears getting noisy or out of alignment. It has a special locking device that keeps the oil or liquid in the pump, preventing it from running out along the shaft.

These pumps are used extensively for pumping oil to inaccessible bearings on complicated machines, also for high speed machines where it is dangerous to depend upon gravity feed. They are designed for circulating cooling water for all kinds of oil or gasoline engines.



The Beach-Russ Gear Pump

The pumps have an inlet and outlet standard threaded connection of ⅜ of an inch. The shipping weight is 15 lb.; capacity, 400 r.p.m., 4 gal. per min. These gear pumps are manufactured by Beach-Russ Co., 220 Broadway, New York.

New Self-Lubricating Spring Has Oil Passages to Each Leaf

A new self-oiling spring has been invented by John C. Dowd, and is being marketed by the T. Tyler Boggs Co., 201 N. Broad St., Philadelphia. This spring provides for the entrance of lubricating oil at the spring bolt. The course of the oil extends through the bolt, the bushing and to the end of each leaf in turn, through passageways provided.

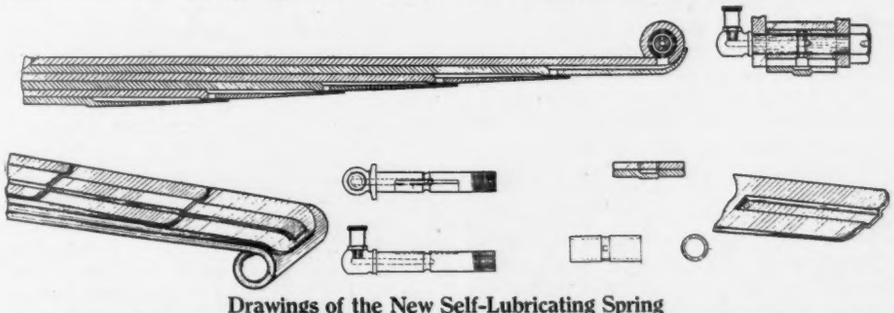
The spring bolt, equipped with an oil cup, is drilled more than half of its length, and is grooved in the center on the circumference. The hole drilled through the center is connected to this groove by a small oil hole. The bushing around the spring bolt is of the usual type, except for the fact that it is grooved in the center and has four oil holes to receive oil from the spring bolt. These oil holes are spaced equally. The eye of the main leaf of the spring is drilled at the bottom to receive oil from the bolt through the bushing. The oil, after passing through this hole, is in turn distributed to the channel of the second leaf and flowing through to the end of this channel, passes through another hole to the third leaf, etc. Oil is thus introduced to the end of each leaf until it reaches the short plate.

The maker states that this self-oiling spring construction will eliminate crystallization and rust and prevent any unevenness in operation of spring. This product is not available for other than lower semi-elliptic portion of a spring.

Dublservis Pull-Out

The A. B. C. Mfg. Co., of 1504 Grand Ave., Kansas City, Mo., has brought out the Dublservis Pull-Out Set, an outfit to extricate a car when stalled in the mud. This device has been designed by J. H. Wittmann and is claimed to restore lost traction to a stalled machine in a simple manner. It consists of four specially designed steel stakes, two short lengths of chain with heavy insulating sleeves, and a strong canvas bag. Complete instructions are included with each outfit. The maker states that each set provides enough equipment for restoring sufficient traction to both drive wheels, when used in connection with their standard mud chains, to draw the car from a bad mud hole. The total weight of the outfit is 2½ lb.

This Device is Designed to Extricate a Truck Stalled in Mud

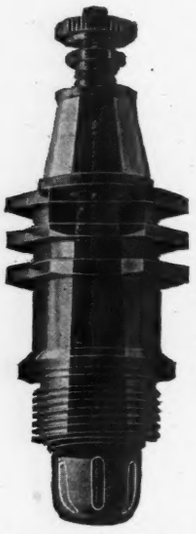


Drawings of the New Self-Lubricating Spring

The accompanying illustrations show the construction of this spring; the upper left illustration is a view of half of a semi-elliptic; the lower left illustration is a view of the under side of it, and next to this is the spring bolt. At the right are shown the bushing, with an end view of it, and an end view of one of the leaves itself. The upper right illustration shows the spring bolt, the bushing and the end of the spring in section.

Cooling Flanges Feature New Hill Spark Plug

A new spark plug, copper-plated and oxidized to prevent rust, has been announced by the Hill Insulating and Mfg. Corp., 511 West 42nd St., New York City. The steel shell is made in one piece and carefully machined and finished. The insulation is mica, split thin and formed to a taper tube 3-32 in. thick. The electrode spindle, that is, the part in which the centered electrode is fastened, is of steel the same as the outside shell. This tapered spindle, along with the mica sleeve, is forced into the shell under pressure, giving an absolutely tight joint, the bearing surface of which is about ¾ in. The maker states the only effect the contraction and expansion of this steel has is to make the joints tight. This one-piece steel construction eliminates the use of a gasket. The mica insulation runs the full length of the plug and gives protection against short circuits. The center electrode and the electrode cap are of special alloy material that will not burn or fuse. The electrode cap, it is claimed, helps to prevent carbon deposits and short circuiting of the spark plug points. The porcelain top serves as a base for the terminal connections and improves the appearance of the plug. It has no electrical or mechanical function and may be broken or thrown away, without interfering with the operation of the plug. The price is $1.25 each for all regular and extreme sizes. The ¾ tractor special plug sells at $2.



The Hill 3A Spark Plug

Rubrback and Khaki Back Tube Patches

The Northwestern Chemical Co., Marietta, Ohio, has added to its Norwesco "Chemically Correct" line of automotive utilities, two self-vulcanizing tube patches, Rubrback and Khaki Back.

The Rubrback tube patch is designed for repairing both punctures and blowouts, and expands with the tire, preventing tendency of pulling loose when tire is inflated.

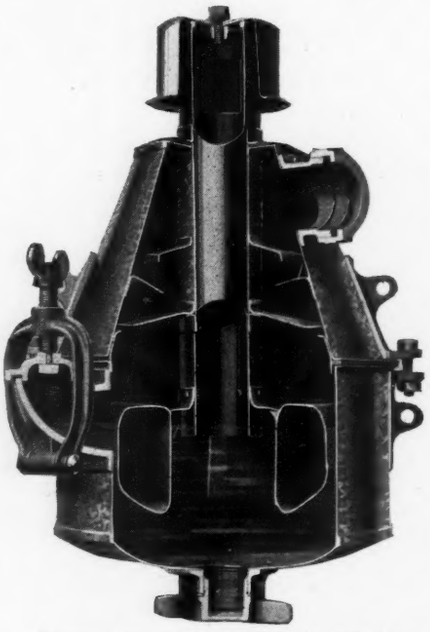
Khaki Back tube patch is reinforced with a covering of Khaki cloth. This patch is especially effective where a non-stretching repair is necessary and is effective under extreme heat or cold. Each outfit is packed in a screw top container, two sizes, and contains sufficient cement and emery cloth for making numerous hasty and permanent repairs.

Holley Introduces Air Washer

The necessity for air washers on the carburetors of tractors and their increased use on trucks has led the Holley Brothers Co., of 131 Rowena St., Detroit, to design and market the Holley Air Washer.

This device, known as Model 529, draws the air through water, removing the dust and dirt before the air enters the carburetor. It consists of a tank containing water, above which is supported by a float, a tube through which the air enters the washer. The lower end of the tube extends beneath the surface of the water about a quarter of an inch. The float automatically maintains the depth to which this tube extends into the water.

Above the float a series of baffles prevent any large drops of water from passing out of the washer with the air. The float tube has a cap which prevents dirt or solid matter from entering the tube when the water is nearly exhausted. This automatically stops the engine and warns the driver that more water is needed. The machine can be operated by opening the cover of the water filler until more water can be obtained for the air washer.



Cutaway View of the Holley Air-Washer

After the air passes the baffles it leaves the outlet casting at the coupling shown at the top at the right side. This outlet has a stuffing box so that a tube can be attached and a pipe connection made.

The Holley air washer is suitable for use on all makes of tractors and trucks equipped with engines of 4-cylinder up to 4½ in. bore and 5½ in. stroke. It weighs 17 lb. empty, 25½ lb. filled. The advantage of using an air washer is that it means practically the complete removal of dust and dirt from the air and it, moreover, increases the power of the engine since the air is humidified, making for more perfect combustion and lower temperature.

New Tillotson Carburetor

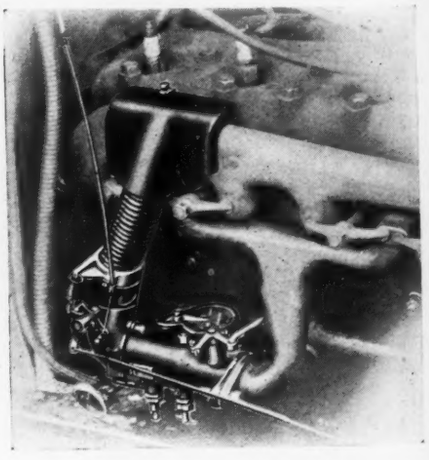
A new carburetor for Ford cars, which requires only the use of a wrench and a screwdriver to install, is being manufactured and sold by the Tillotson Mfg. Co., of Toledo, Ohio. It is known as Tillotson Type 4.

The new carburetor's principal features are its simplicity of operation, its fuel saving and its ability to maintain a constant mixture of gas and air at varying engine speeds. It can be attached to the present Ford intake manifold without any additional or specially designed parts. Once in place, it can be quickly and accurately adjusted with the single and only adjustment provided.

The air is taken into the new carburetor at one point only—direct from around the exhaust manifold. It passes through the air horn until it reaches the automatic air valve. This valve is in the shape of a wedge, along the two sides of which are attached flexible reeds. These reeds, of high grade elastic metal, converge to the point where is located the low speed, or primary nozzle, which is fitted with the only controllable adjustment to be found on the Tillotson instrument. The air reaches a high velocity at the primary nozzle, drawing out and breaking up the fuel into a very homogeneous mixture.

As the throttle is advanced and a greater quantity of air is required, this nozzle automatically increases the fuel supply to the inrushing currents until it reaches its maximum capacity at a car speed of from 15 to 20 m.p.h. Then the secondary nozzle, located farther back in the valve, is affected and begins to deliver an auxiliary supply of fuel. Throughout the entire range the reeds open and close automatically, maintaining the highest partial vacuum at all speeds.

The new Tillotson Type 4 embodies the several principles and the same standards of workmanship which go to make up the large and more expensive carburetors manufactured by this company. The Type 4 sells for $15, f.o.b. Toledo, Ohio.

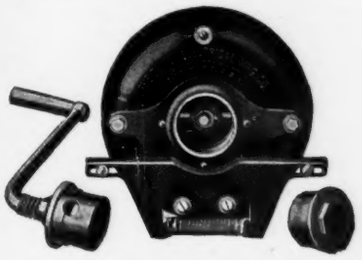


Tillotson Ford Model

Operates on the same principle as the larger models of Tillotson carburetors

The Dayton Starting, Lighting and Ignition System for Ford Cars

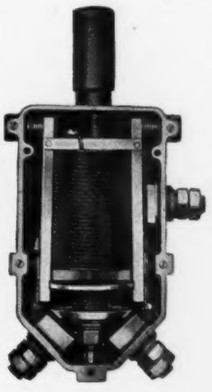
The Dayton starter for Ford cars is a single unit outfit, chainless, clutchless and gearless. It starts the engine and charges the battery with one instrument,



The Complete Motor-Dynamo and Crank

a motor-dynamo, this being the principal unit of the system. It is attached to the crankshaft of the engine, mounted in place of the crank handle, and fastened at the front end of the channel bar of the Ford car. This position makes it accessible without raising the hood and leaves the engine, carburetor, etc., accessible.

The starting switch, located on the foot board, is in reality a combined starting switch and cut-out, in that it will automatically break the circuit between the



A Cross-Sectional View of Combined Starting Switch and Automatic Cut-Out

dynamo and the battery, so that the battery will not discharge when the engine is running at a very low speed. The battery used is 6-12 volt, 6 volts for lighting and 12 volts for starting. The maker states that it will spin the engine at 300 r.p.m. A convenient location for the battery is on the running board—a box for the battery being furnished. With this outfit is also included complete wiring for starting and ignition and a dimming attachment on the lighting switch for the headlights. This complete outfit is manufactured by the Dayton Electrical Mfg. Co., of Dayton, Ohio.

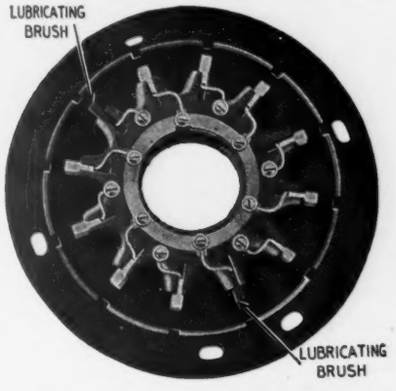
It is possible to connect it direct to the crankshaft because of the new armature used in the motor-dynamo, which is a recent invention of Vincent G. Apple. There is no cotton insulated wire used in its construction, the windings being made with flat copper strips cut to length and formed into hairpin loops which are inserted through a number of laminated iron discs. They are then bent into shape by a special machine to make them uniform, leaving the flat ends to weld to the commutator segments. This is done with an electric welder which makes the commutator a part of the winding, thus preventing open circuits. After the armature is assembled, it is impregnated with bakelite and baked, which makes it a solid homogeneous mass impervious to damage by heat, oil or water. This armature can be shaped to fit the frame of any low-voltage dynamo using the same sturdy construction.

The field frame of the motor-dynamo is made of semi-steel and has twelve field poles in which the armature rotates to generate the electric current.

The brush assembly is on the back of the motor-dynamo front plate. Instead

The Armature Complete

of using two large brushes to carry the starting current, they are divided into twelve parts in order to give the "finger" action, so desirable for commutator brushes. Two of these brushes are almost pure graphite for lubricating the commutator, thereby eliminating any necessity of using oil on the commutator. The other ten brushes are made of metal graphite composition. As the brush



The Commutator Brush Assembly

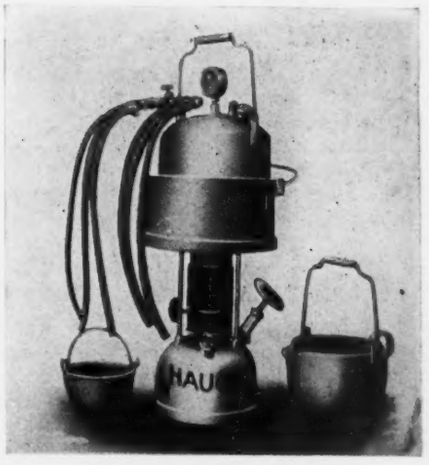
assembly is of the "finger" type, there are always two or more making contact to generate the electric current.

The starting switch and automatic cut-out is mounted on the frame of the car under the heel board and is operated by pushing down on the starter button with the heel. This operation connects the battery in series, giving twelve volts to the dynamo, making a motor out of it to start the engine. When released, it automatically comes back to the running position and the motor changes to a dynamo which generates the electric current to recharge the 6-volt battery. This replaces the current which was used by the motor for cranking the engine and lighting the lamps. When the voltage of the dynamo drops below the charging rate, the cut-out in the switch automatically breaks the circuit between the dynamo and battery so that the battery will not discharge when the car is running at too low a speed or when the engine is at rest.

A Storage Battery Steamer of a New Type

A new apparatus for opening storage batteries has been announced by the Hauck Mfg. Co., 101 11th St., Brooklyn, N. Y. It consists of a steam generator with six jets, three of which are controlled by a valve. The valve is closed for three cell batteries and opened when all six jets are necessary for larger ones. The time required to get up steam is from 2 to 4 minutes. The outfit is operated by kerosene, although burners can be furnished if desired.

The steam generator is fitted with a safety valve which blows off at 10 lb.



The Battery Steaming Outfit

This is a compact and strongly built device which reduces the time required to remove cell plates from a battery.

pressure, although 3 lb. are sufficient. The vent caps of the battery are removed and the jets inserted on each cell; the steam is forced directly into the cells. The maker states that within four or five minutes the plates can be removed. A melting kettle for melting wax for resealing is supplied—its capacity is 1 gal. With the outfit is also furnished a 35-lb. capacity lead melting pot for reclaiming the lead and lead moulds to make sticks.

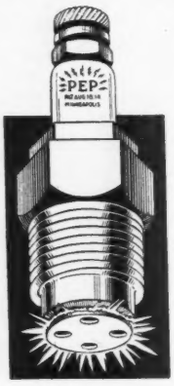
AC Speedometer in Production

FLINT, MICH., May 20.—The Champion Ignition Co., manufacturer of AC Spark Plugs, announces that it has begun production of its new speedometer. The speedometer development and manufacturing departments of the company will be under the supervision of Jo. Berge. Full description and illustration of the new AC magnetic speedometer will be given in a subsequent issue of the COMMERCIAL CAR JOURNAL.

Pep Spark Plug

The Pep Spark Plug Co., 932 McKnight Bldg., Minneapolis, Minn., is the manufacturer of the Pep spark plug. The disk electrode, covering the lower ends of these plugs, gives 2 in. of sparking surface. The result is large, hot sparks around the outer end of the disk, insuring combustion even on a poor mixture or with a weak battery or magneto current.

The disk electrode closes the lower end of the Pep plug, and prevents oil and carbon from reaching and collecting



Showing the Disk Electrode of the Pep Spark Plug.

on the lower end of the porcelain, doing away with the most common cause of short circuits.

The plugs are sold to dealers at $7.80 per dozen, and retail at $1 each.

Flashon Anti-Skid Chains

This is a chain for solid motor truck tires, consisting of a pair of sister-hooks in combination with a detachable cross chain. The cross chain lies across the face of the tire. The two end links of this chain are locked into the sister-hook on the end of the anchor chain. The anchor chain encircles the spokes, hooking the end link into the sister-hook. In attaching the two end links of the cross chain are slipped into the sister-hooks and the hooks closed; the interlocking link is then turned. It is claimed that Flashon chains can be attached in 30 minutes and detached in fifteen minutes; that no clamps, bolts, tools or jack are required. The prices range from $.85 to $.95 for single tire spoke chains. Cross chains are $.25 to $.30 per foot, according

The Flashon Quick Anti-Skid Chain

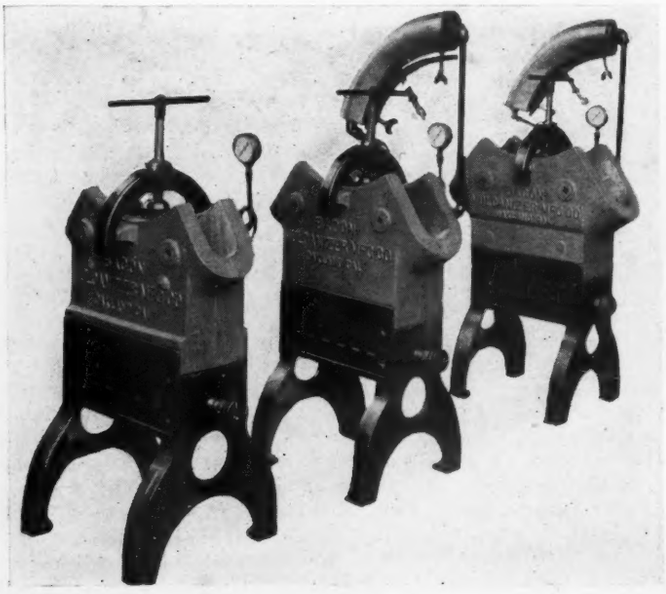
to size. Dual tire spoke chains $.95 to $1.25; dual cross chain, $.28 to $.50 per foot, according to size. They are packed 12 spoke chains in a bag; 50 feet of cross chain in bag.

The Flashon Chains are made by the National Chain Co., 30 East 42nd St., New York City, N. Y.

The New Bacon Vulcanizer for Cord Tires

The Bacon Vulcanizer Mfg. Co., of 1853 38th Ave., Oakland, Cal., has brought out a new vulcanizer for cord tires. Since the cord tires are oversized, the section moulds have been made accordingly—the cavities being 5 per cent. oversize and very deep and long. This vulcanizer has an individual generator and the parts are standardized. Parts or other sectional moulds may be added to this outfit from time to time, as the business increases. The price of the outfit complete with five sets of closely machined bead moulds, inside curing forms, burners, gages, safety valves, etc., is $255.

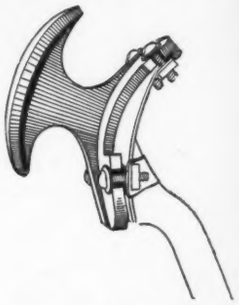
This mould contains its own generator, this having been found the most economical in operating and upkeep. The water level is far below the cavity, insuring dry steam. These moulds can be had with or without inside curing forms, although such forms are essential to high-class workmanship and cost but little extra. A tube plate 22 x 4 in. may be attached to the outfit if desired. Crated for shipment it weighs approximately 800 lb.



The Bacon Vulcanizer
This vulcanizer for cord tires has oversize cavities and parts are standardized.

Extension for the Reverse Pedal

The Ellis-Smith Mfg. Co., Inc., of Elmira, N. Y., is manufacturing a neat device for the Ford reverse pedal, the purpose of which is to make driving safer and easier. It is known as the Easy Back Pedal for Fords. It is an extension for the reverse pedal to facili-



The Easy Back Pedal for Fords
A device to be attached to the reverse pedal of a Ford car.

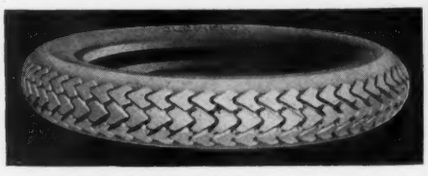
tate finding the correct pedal as it acts as a foot guide when driving at night or in heavy traffic.

It does not interfere with the use of regular rubber pedals and is easily attached. It is made of iron and sells at $.75. It is held in place by four bolts and two clamps, which are furnished with each pedal, and no drilling or special work need be done in attaching.

Oldfield Tires

All Oldfield tires are built by a two-cure wrapped-tread process, and the tread compound is tempered with zinc, for added toughness, elasticity and durability. The anti-skid type, shown in the illustration, is especially distinctive in appearance, its road-gripping qualities being secured by three rows of arrow-shaped projections which offer resistance to slipping in every direction.

Both fabric and cords are furnished, and in all sizes. The Oldfield cord is of multiple-ply type. While all sizes of tires are furnished there is but one quality, and that quality is the result of President Oldfield's experience on nearly 20 years of racing and touring, and represents materials and principles of con-



The Oldfield Anti-Skid Tire

struction which the "Master Driver" successfully tested out. Tubes are either red or gray.

Distribution is through tire merchants and distributors, in protected territory. The company maintains but one branch, the Oldfield Tire Co., of Los Angeles, Cal., which Mr. Oldfield himself established several seasons ago.

The Gray Victory Engine

The Gray Motor Co., of Detroit, Mich., has recently announced a new engine known as the Gray Victory Model. It is 4-cylinder, with a bore of 3½ in. and a stroke of 5 in. This engine has been designed with a view to giving efficiency and economy, when operated with the prevailing low grade fuel. The engine is flexible and quiet, and possesses durability for truck and tractor work.

The cylinders are cast in block with cylinder head separate. The crankcase is of gray iron and the compression spaces of the combustion chambers are machined exactly alike. The cylinder block is offset. The oil pan for truck and tractor work is also of gray iron. The valves are enclosed and operated by a single camshaft. Inlet and exhaust have a working diameter of 1 21-32 in. The valve stems are carbon steel and the heads cast iron.

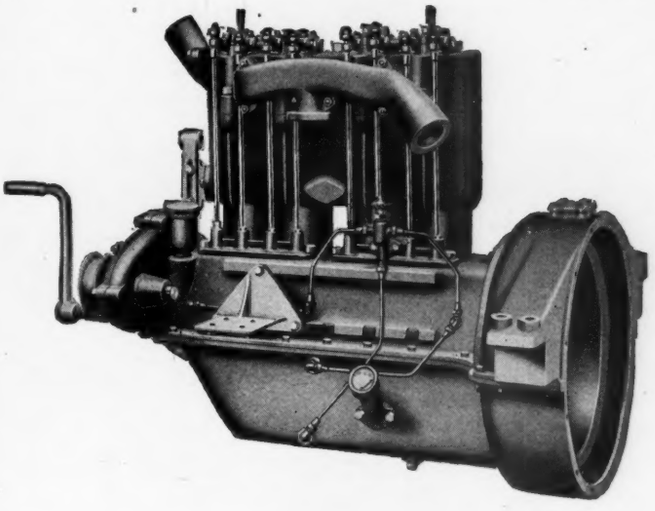
The pistons used are of gray iron, ground to size and treated to eliminate deformation. The rings are one-piece, cast-iron, diagonally split. The connecting rods are I-beam section, drop forged steel, heat-treated, 9¼ in. center to center. The connecting rod bearings are 1¾ in. by 2 in., die cast babbitt, S. A. E. specifications.

The crankshaft has three main bearings, 2 in. in diam. It is of 40 to 50 per cent. carbon steel, heat-treated and ground. The bearings are die cast babbitt, S. A. E. specifications. The front bearing is 2¾ in., center 2 in. and rear 3⅜ in. Laminated shims are used for spacing between the bearings and caps.

The camshaft has three bearings also, and is a one-piece forging from No. 1010 S. A. E. carbon steel, carbonized and ground, 15-16-in. in diam. It has cast iron bearings integral with cylinder block. The camshaft carries integral cam to operate oil pump plunger and is driven by a helical gear. The timing gears are also helical, 10-pitch, ⅞-in. face. The gear on the camshaft is of cast iron, and those on crankshaft and magneto shaft are of steel. The timing gear cover is of malleable iron. The cooling of this engine is effected by the thermo-syphon system.

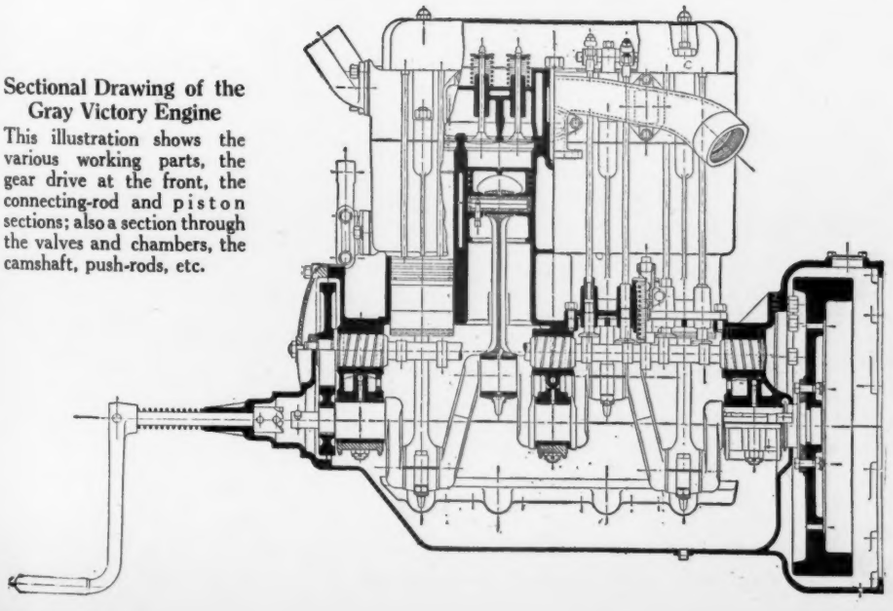
The lubrication is by force feed to the three main bearings, timing gears and connecting rod troughs; splash for the camshaft bearings, pistons, connecting rod bearings and cylinders. A self-priming plunger pump is used with double check valve. The oil is screened to remove foreign matter. A positive dial indicator oil gage reveals the quantity of oil contained in the crankcase.

There is an integral hot-spot intake and exhaust manifold in connection with cylinder head which has two hot spots. The manifold is located on the left side of the engine for standard and vertical carburetor. The standard S. A. E. 1-in. horizontal type carburetor can be accommodated on the right side of the engine, bolted direct to the cylinder block. With the horizontal type, intake passage leads through hot water space between No. 2 and No. 3 cylinders. The flywheel is attached to the crankshaft by bolts and is furnished to accommodate standard clutches used in connection with No. 3 S. A. E. bell housing. The starting-motor flange is arranged on detachable bell housing, No. 3 S. A. E. ignition generator or plain lighting generator bracket, and drive can be by the standard two-bearing magneto shaft and coupling. The bell housing is of cast iron for truck and tractor work. This engine is rated at 19.6 hp. with a displacement of 192.4 cu. in. The fan bracket is of malleable iron and adjustable. This engine has provision for 3-point support. It weighs 495 lb., with cast iron base and bell housing.



Left Side of Gray Victory Engine

The front is cast in block, with the upper half of crankcase of gray iron. The cylinder head is removable and two hot-spots are said to facilitate efficiency in the use of low-grade fuel.

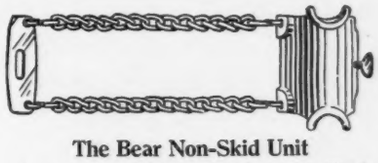


Sectional Drawing of the Gray Victory Engine

This illustration shows the various working parts, the gear drive at the front, the connecting-rod and piston sections; also a section through the valves and chambers, the camshaft, push-rods, etc.

Quick Detachable Non-Skids

The Bear Mfg. Co., of Rock Island, Ill., is putting on the market a quick detachable non-skid chain for Ford and Dodge cars. No jacks or other tools are needed as the chains fasten over felloe, rim and tire. The chains are in sections, as shown in illustration and are clamped on by forcing the escutcheon plate over a thumb screw. The price for the full set of eight chains is $8. The only wear is on the cross chains which are easily and cheaply replaced.



The Bear Non-Skid Unit

A quick detachable non-skid unit for Ford and Dodge cars

Sewell Cushion Wheel Co., Detroit, announces that at a recent meeting of the board of directors, a dividend of 7 per cent. was declared on both the preferred and common stock for stockholders of record June 1, 1919. This company is planning to open factory branches in Portland, Ore., Los Angeles and San Francisco.

Packard Motor Car Co. of Philadelphia, 319 N. Broad St., has recently installed a tire press, and is prepared to furnish service on solid tires or commercial pneumatics.

Campbell Transmission Unique in Design

Has Constant Mesh Gears and Sliding-Rotating Key Gear Pickup

THE Campbell transmission is made by the Campbell Transmission Company, of Buchanan, Michigan. The company has a small factory of modern construction in which they can build a moderate quantity of transmissions but they are prepared to license larger manufacturers who wish large quantities of gear boxes made according to this design.

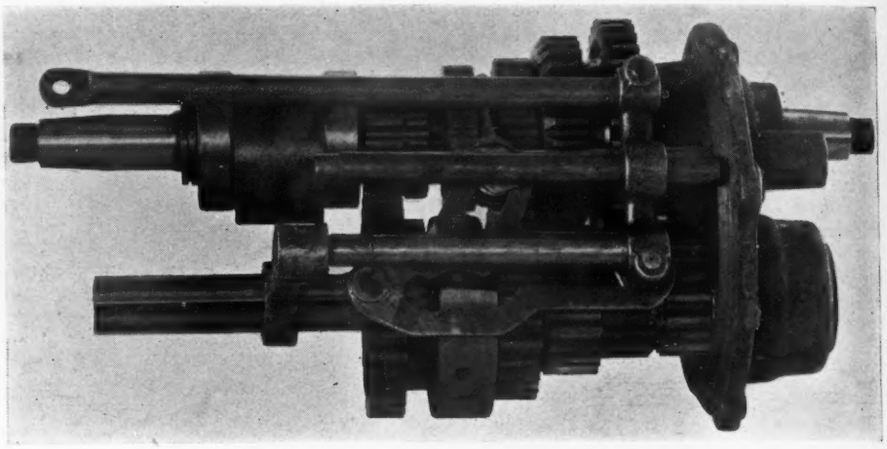
The Campbell transmission is most unique on account of its sliding-rotating key which seems to have solved the problem of picking up constant mesh gears. In this article the action of this key will be fully explained as well as the design of the transmission, although the latter is only one of many possible combinations of gears utilizing the sliding-rotating key principle.

General Design of Transmission

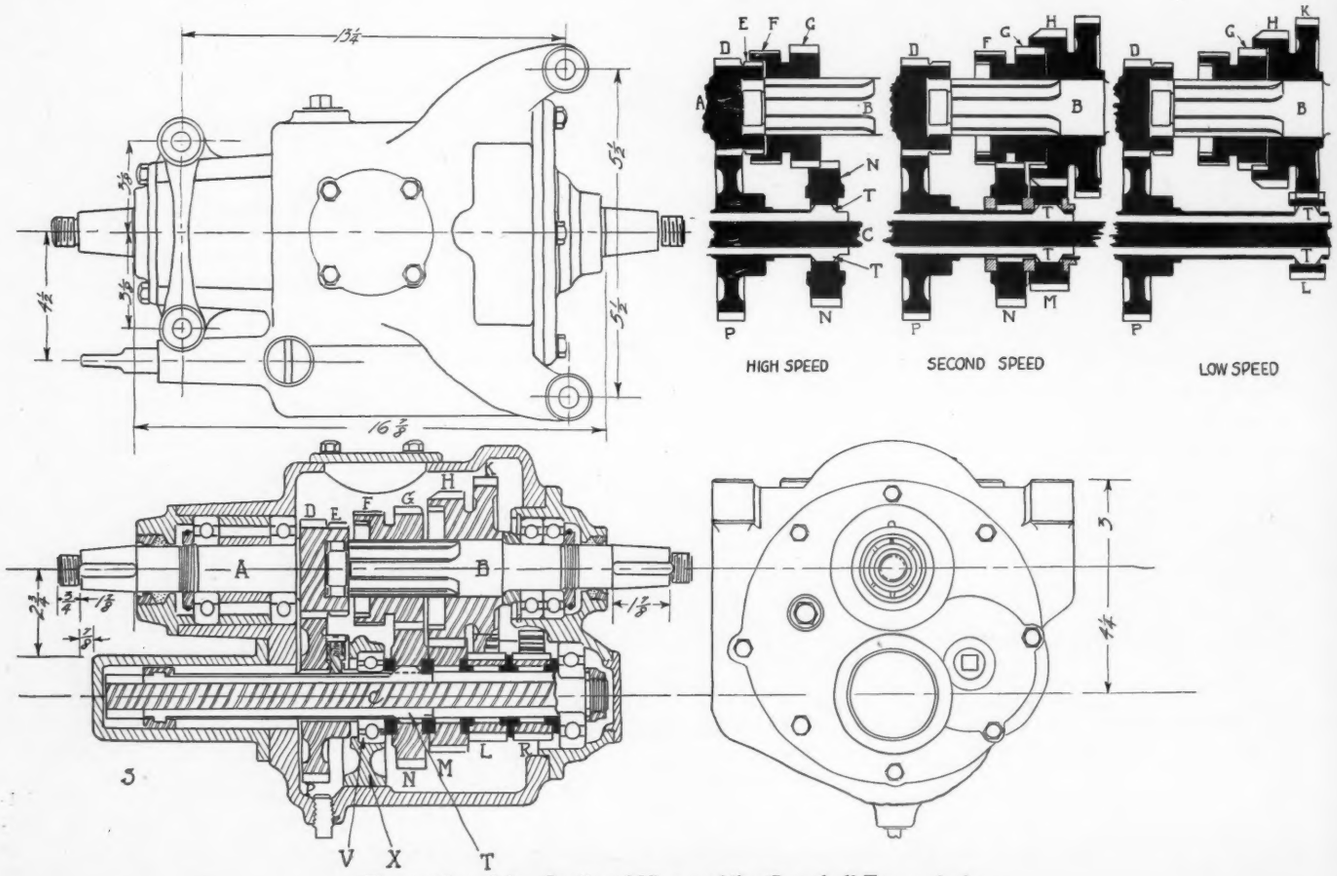
The design of transmission shown in the accompanying line drawing of it in section, illustrates the short-compact layout that can be obtained by the use of the key pick-up of the gears. This is a four forward and one reverse speed transmission. This transmission was tested on a 2-ton Garford truck at the Great Lakes Naval Training Station where it is claimed there was not the least trouble although it was given severe punishment.

The transmission as shown is in third speed position. From this position down to reverse the speeds are obtained by a combination movement of the key and a shifting of the gears. On high speed the drive is direct and the conditions of operation in this case are identical with those of any other direct drive transmission except that only four of the gears are rotating instead of all of them.

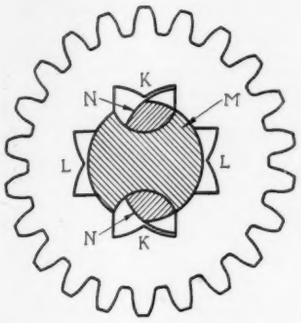
The clutch shaft, A, which is integral with the clutch gear, D, is mounted upon two 308 annular ball bearings. A roller spigot bearing is formed inside of the



Campbell Transmission Gears and Gear-Shifting Cam-Plate Shown in Position But With Case Removed



Figures 1 and 6. Sectional Views of the Campbell Transmission



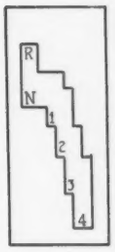


Fig. 5. Campbell Gear Shift Quadrant

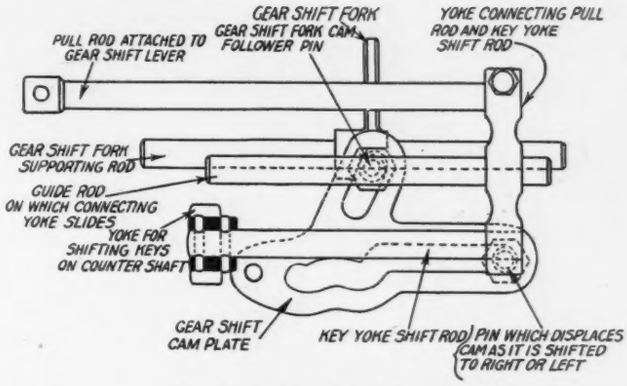


Fig. 4. Details of the Campbell Transmission Gear Shifting Mechanism

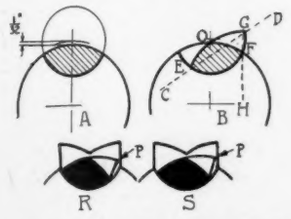


Fig. 2. Details of Campbell Transmission Gear and Key

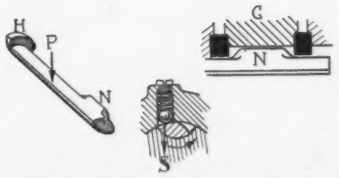


Fig. 3. Diagrams and Details of Key Operation

clutch gear and serves to support the front end of the splined shaft. The rear end of the splined shaft, B, is carried upon two 308 annular bearings placed close together. There is no connection between the two shafts except when the gears, E and F, are engaged, in which case the two shafts, A and B, rotate as one and direct drive is obtained.

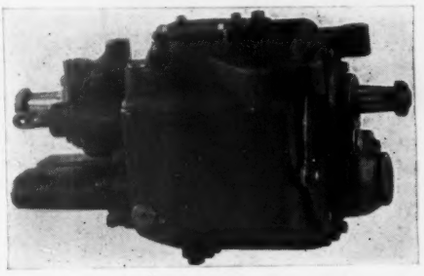
The countershaft is carried upon two annular ball bearings also. The front one is a 308 while the rear one is a 406. The countershaft, C, is well supported, as the bearings are placed as close to the gears as possible. To accomplish this, the constant mesh gear, P, is overhung instead of being between the bearings.

The countershaft is provided with the two sliding-rotating keys which pick up the gears, N, M, L and R, which engage the third, second, first and reverse speeds, respectively. The gears do not run upon the countershaft but are supported by collars between each gear. These catch the gears at a greater radius than the shaft and therefore give a greater lateral stability to the gears than would be obtained by a bearing upon the shaft, a short one at that. These collars also serve another purpose, they provide the proper timing of the keys, not allowing them to engage until the entire face of the key can be presented to the gear.

The splined shaft has two sets of gears, one set which is splined in place and positively rotates with the shaft, B. These are indicated as F and G. The other two gears, H and K, are loosely mounted upon the shaft, B. They are only driven when the splined gears are engaged with them.

Operation of Sliding-Rotating Keys

The operation of the sliding-rotating keys is shown by the diagram, Fig. 2 and the sketches, Fig. 3. Referring to the first of these it will be seen that the countershaft, M, has two semi-circular grooves diametrically opposite in which the keys, N-N, rotate. The shape of the keys is shown but it can better be explained by considering how they are made. The center of the key bar is located .1-32 in. above the circumference of the shaft, as shown at A. The upper portion of the bar is then turned off, leaving the shaded section which just fills the semi-circular slot in the shaft. Next



Exterior View of the Campbell Transmission

the portion of the key remaining is rotated until the point, G, is the proper height above the circumference of the shaft and then the key is turned off along the line OF, leaving only the small shaded portion, OFE. At one point near the end, or about an inch in length the locking part of the key, is kept the original section. This is the unshaded portion, OGF, in the diagram, B. Of finish the key the arc, GF, is flattened to a chord which is indicated by the line, GH, which is parallel to a line passing through the center of the shaft, B, and the axis, O, of the key.

In the drawing of the complete gear and shaft, the keys, N-N, are shown in the locked position. One takes the drive and the other takes up the back lash. There are four broached keyways in the gears, K-K and L-L, into which the keys fit.

Keys Are Under Compression

There is no tendency for the gears to shear off the keys in this transmission on account of the design of the key. If you will refer to R and S, in Fig. 2, you will see that the point, P, strikes the keyway first and hence tends to roll the key into the fully engaged position shown in the upper figure. Hence the load cannot be applied to the entire key until it is fully engaged over its whole surface. In this position the thrust of the gear against the key is in the direction of the line, CD, in sketch B. This puts the key under compression and not shear, and it has the maximum cross section at this point. According to tests that have been made at Armour Institute, Mr. Campbell showed how the shafts were bent without showing any failure in the key.

In Fig. 3, the key and its operation are explained. The ends of the locking portion of the key are beveled off so that they will slide under the collars between the gears. The beveled edges can be seen on the key, N, where it is shown between the collars and the gear, G. The key is therefore forced to rotate out or allowed to rotate into engagement by sliding it under the collars. It is caused to rotate into engagement by the ball and spring which pushes down on the side of the key, P, with a force, S, causing the gear to rotate in the direction of the arrow. The key is shifted endwise by a yoke which surrounds the projection H.

Shifting Mechanism

The countershaft gears have to be engaged and disengaged by the sliding-rotating key and the gears on the splined shaft also have to be shifted to make the different gear changes. To do this simultaneously there is a cam located in the transmission case that controls the position of the gears and the key at all times. This is shown in Fig. 4. The cam grooves are so arranged that the key always releases the countershaft gears before the sliding gears are shifted.

Progressive Gear Pickup

The change of speeds is progressive as indicated by the quadrant, Fig. 5. The notches are made in the manner indicated so as to eliminate feeling for the proper notch with a latch as had to be done when progressive sliding gears were used.

Gear Positions

The transmission is shown in third speed so that the high, second and low speed positions remain to be shown. These are illustrated in Fig. 6.

The following gear ratios are obtained on each of the speeds:

High or direct drive	1 to 1.000
Third	1 to 1.500
Second	1 to 2.620
Low or First	1 to 4.000
Reverse	1 to 4.810

6-8 pitch gears are used throughout.

The various gears have the following number of teeth:

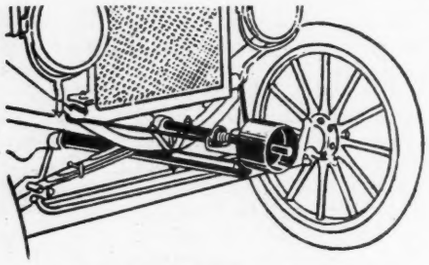
D	18	H	30
P	33	M	21
G	23	K	35
N	28	L	16

The gears which are engaged on the various speeds and in the order in which the drive passes through them are as follows:

Direct	A-D-E-F-B
Third	A-D-P-N-G-B
Second	A-D-P-M-H-G-B
First	A-D-P-L-K-G-B

Simplex Power Transmitter

The Simplex Power Transmitter, when attached to the Ford car, is used, in the place of hand power or stationary engines, to operate machinery. It is claimed that it will deliver 6 to 8 hp. at the drive belt. This power is sufficient to



The Simplex Device Attached

grind feed, saw wood, fill silos, operate small threshers, pump water, run cream separators, churn, and in fact do anything any engine of the same power will do. The Transmitter consists of a shaft made of cold rolled steel, on one end of which is a special ratchet that engages with the starting ratchet on the engine. On the other end of the shaft is a pulley. This shaft runs in two bearings which are supported by another tubular shaft that is attached to the front and hooks over radius rods at the engine base, as shown in the illustration. The price of this power transmitter is $12.50. It is made and guaranteed by Fremont Foundry & Feed Mill Co., Oklahoma City, Okla.

Auxiliary Support Bracket for Ford Engines

The K & W Mfg. Co., Perma-Loc Bldg., Wilkes-Barre, Pa., is manufacturing the Johnson auxiliary engine support bracket. This device, which sells for $1.50, is designed primarily as a support for Ford engines, but can be used to repair the crankcase should it break at this point, by installing a support before any breakage occurs which prevents delay possibly at an inconvenient time. The installation of this arm requires only the

The Johnson Auxiliary Engine Support

This device is made by the K. & W. Manufacturing Company, Wilkes - Barre, Pa., and sells for $1.50.

loosening and tightening of four bolts. The Perma-Loc Co., of Wilkes-Barre, Pa., is the sole distributor for this article.

Babbitting Jig and Cylinder Reamer for Ford Cars

The Tribune Engineering Co., Inc., of Owego, Tioga Co., N. Y., is manufacturing tools and appliances for use in the Ford repair shop, among these being the Tribune babbitting jig and the Tribune cylinder reamer. The former is used to replace a worn bearing in the Ford connecting-rod, making it unnecessary to purchase new rods. The jig holds the rod firmly at both ends and insures the bearing being parallel with the piston pin hole. Price of complete outfit, $1.50.

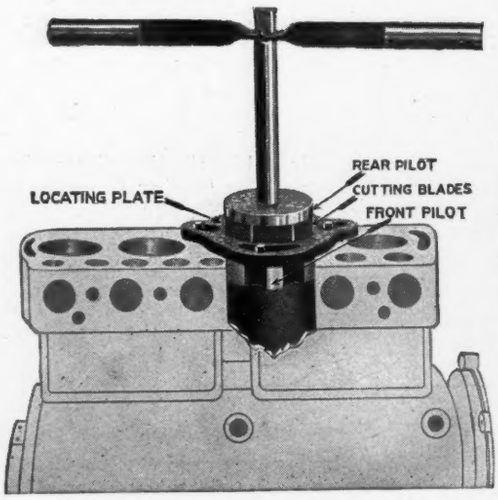
The pilots of the Tribune cylinder reamer, both front and rear, are hardened and ground, so that friction against the cylinder walls will not wear these important parts. The locating plate is hardened and ground to fit accurately on top of the cylinder block. The pilot is inserted into the cylinder before the locating plate is bolted down. The blades of this reamer cut only at the forward end and the balance of the blade acts as a guide. Thus the front and rear pilots and the blades guide the reamer, insuring a straight cut. The blades are of Dreadnaught high speed steel. This cylinder reamer for 1-32 (.031) in. over-size pistons, sells complete for $20, and in any special over-size for the Ford cylinder at $25.

The Highway Non-Skid Truck Chains

The Owen & Graham Co., 2843 E. Grand Blvd., Detroit, is manufacturing the Highway Non-Skid Truck Chains, which are units consisting of the chain and clamp—the latter being permanently attached to the spokes and the chain attached whenever desired. The construction is such that there is no strain on the spokes and injury to the tires is prevented. Clips are made for either round or square spokes. The clamps are fitted with square nuts or winged nuts if desired. The chain is made of heat-treated steel to make it tough and is designed to lie flat on the tire. The clamps are malleable castings, giving ex-

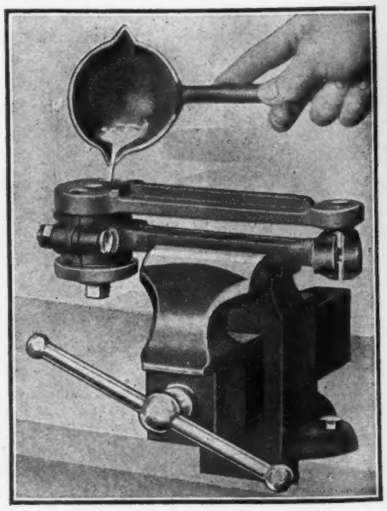
The Clamp is Permanently Attached to the Spokes of the Wheel and the Chain Can be Attached Whenever Desired

cessive strength and durability and are Parker processed to prevent rust. The No 1, small size, fits all light delivery trucks and sells for $26 for a set of 12; No. 2, medium size, fits up to and including all 2-ton models, and sells for $28.50 a set; No. 3, large size, fits all 3-ton trucks and over, and sells at $32.50 for a set.



The Tribune Cylinder Reamer

This reamer for Ford cars has hardened and ground working parts, and front and rear pilots are also hardened and ground.



The Tribune Babbitting Jig

Shows the convenient method for re-babbitting Ford connecting-rods with a Tribune jig

Phenomenal Increase in Number of Hogs Brought to St. Joseph Stock Yards by Motor Truck

Growth in New Method of Marketing Hogs Causes Erection of Additional Docks and Pens Costing $25,000. Indications Point to Steady Increase. Farmers Owning Trucks Sold on Their Advantages

MOTOR trucks are playing a mighty big part in the hog business in the vicinity of St. Joseph, Mo. In fact, this new method of bringing hogs to the yards is viewed with such importance by the stock-yard officials that $25,000 is being spent on a large addition to the hog section to enable the men to handle the altogether unheralded increase along these lines.

Six months ago if 500 hogs were delivered to the yards other than by rail, it was coisidered a good day. Now the daily receipts average over 1500, with occasional increases to 1800 a day. The cause of this 300 per cent. increase, in so short a time, is the rapid adoption of the motor truck by the farmer and its immediate use in the hauling of live stock to market. In the last six months there has been a growing and marked tendency on the part of the live stock dealer to haul the greater number of his hogs into the yards by the new and popular method. The increase is evidenced in all classes of stock, but hogs head the list. A new day and month record was reached in hog receipts during December.

Before the truck was as familiar as it is today, stockmen would have declared it impossible for receipts to increase so materially as a result of the new method of transportation. The increase is considered remarkable, in one way, for the simple reason that only a short time ago few farmers thought of disposing of their stock in this way.

J. O. Barkley, vice-president and general manager of the stockyards company, was impressed when he saw, in the early morning hours, a long line of trucks extending back along the main street, in front of the stock yards exchange building, across the railroad tracks, and into the city. All were waiting to unload at the few docks provided for handling this kind of receipts when wagons constituted the only means of transportation from the farm. Mr. Barkley immediately started action for improving the facilities for handling the increasing number of hogs coming in in trucks from the farms, within a radius of 35 to 40 miles. There were only three docks for unloading. Consequently the farmers were required to wait their turn. Considerable time was lost, and often traffic became so congested that it was necessary to secure the assistance of a traffic officer to direct the trucks and keep the street open to other vehicles.

$25,000 Addition Necessary

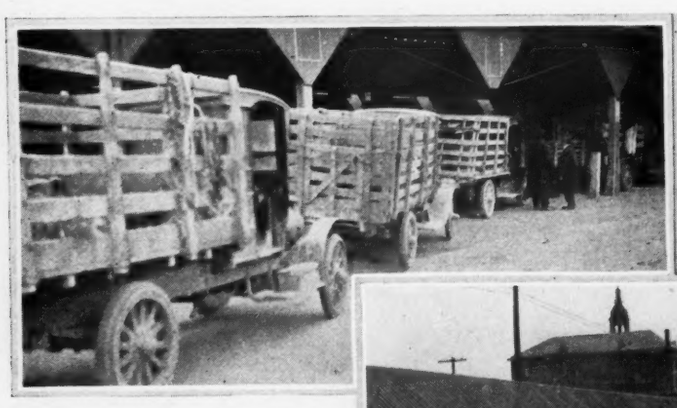
It was decided that the lower end of the hog section could be improved with the addition of about 150 new pens to receive the additional number of hogs and eight new docks on which to unload the trucks. The new sections will cost $25,000 and will be the most complete of any in the Middle West. At the present time the work is being pushed with all speed to be ready for the heavy receipts expected in a month or two.

The new docks and driveways will have a capacity for handling 2500 hogs. The floor will be concrete and the pens, driveways and roofing will be heavy timber. The new construction is especially for motor trucks, but what few wagons continue to come in will also be able to take advantage of the more satisfactory unloading system. The roof over the section will be upheld by heavy girders so that pillars and other obstructions evident in the old section will not interfere with the expeditious handling of the trucks.

The motor truck is being used in this work by farmers living as far as 60 miles from St. Joseph and not all the arrivals are small shipments. Hogs, in sufficient numbers to make a carload, are hauled into the market in trucks by many farmers. The advantages are great. Probably the thing which influences the farmer most, in the use of the truck, is the greater speed with which he can go to town and back. At least, such is their first word of appreciation in commenting on the advantages of the power-driven transportation unit.

Shrinkage Reduction Offers Saving

Other advantages are as important, however. Chief among these is the de-



Part of the line of trucks waiting to unload at the hog-pens of the St. Joseph stock yards. The waiting will be eliminated when the new docks are completed.

Site of the new docks and pens being added to the hog section to accommodate the great increase in receipts due to the use of trucks by farmers.

All morning the trucks come into the hog yards in lines from all parts of surrounding country for distances up to forty and fifty miles. From front to rear are a 1-ton Maxwell, a 1-ton International, a 1-ton Denby and a 1½-ton Fulton. They came from varying distances, the Fulton arriving after a thirty-five mile run.

Take My Place For Just One Day

"And you'll know, as I do, what it means to drive a truck equipped with a Ross Steering Gear. You can't tell much about it in a few minutes' trial—nor even in an hour or two. It's the long grind, morning to night, day in and day out, that tells the tale.

"I've driven a lot of trucks in my time—most of them good ones, too—well made and with good reputations. Some of them were hard to handle—just a constant strain all day long. Many a time I've gone home so dead tired that I was simply 'all in, down and out'.

"Then there were others so easy to handle that it was a pleasure to run them. There wasn't much difference in general construction, but I soon found that the trucks that were easiest to handle had a Ross Steering Gear. That one thing made all the difference.

"Ross Gears have an unusually big bearing surface so that it is easy to steer the truck under all conditions. This gear is so well made and the material is so good that I always feel better with a Ross Steering Gear. It means safety and reliability, and the work is easier.

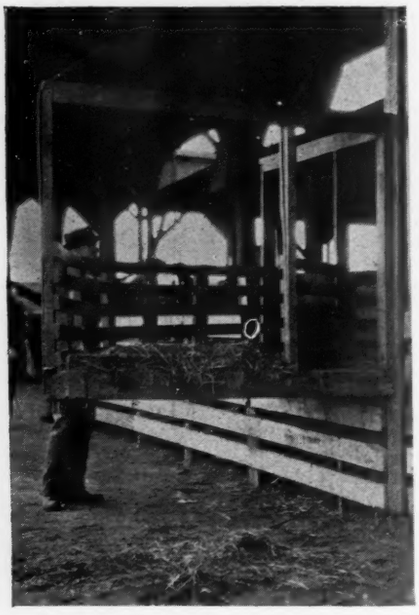
"The boss says I am doing more work with this Ross Steered truck—and I know I am—but it's a fact that I don't have to work so hard to do it. I'm satisfied, and since he has given me more money because of the work I am doing, the boss must be satisfied too."

Ross Gears are used as standard equipment by one hundred and fifteen manufacturers, representing considerably over half the motor truck industry. Write for catalog and any special information desired.

The Steering Gears that PREDOMINATE on Motor Trucks

ROSS GEAR & TOOL COMPANY
760 Heath Street, Lafayette, Indiana

crease in shrinkage. A hog shipped by rail will shrink from 5 to 8 lb. depending on the distance. By motor truck this is reduced to from 2 to 4 lb. On each hog therefore; there is a saving of from 3 to 4 pounds, which means a money saving of 34 to 72 cents, with hogs selling at the conservative figure of 18.5 cents a pound. The trucks have a capacity for about 18 hogs, although the full number is not always brought in. When each of 18 hogs sells for 50 cents more than it would sell after being shipped in by rail, the sum earned by the truck is considerably more than the increased cost of the haul, even over poor roads.



The Truck Body and the Quarter-Circle Runway Are on the Same Level

After the truck drives alongside the pens, the runway is pulled out in the position shown. The truck has just left after unloading.

Mixed loads are often carried in the trucks. There will be a few hogs, two sheep and a calf in one truck. The next will contain three calves and a half a dozen hogs. Some truck bodies have double decks for this kind of work so that the load could be increased. Most of the bodies however are the common express type with a home-made stock rack fastened in place and easily removable so that the truck can be used to haul loose or sacked grains and other farm products. The farmer is able to haul a load of needed supplies back to the farm after delivering his live stock. These supplies include concentrated stock foods, grain feeds, groceries and household needs.

Must Have Provision for Washing Trucks

For this reason, each stock yard should provide means for washing the truck bodies. Grain sacks, flour and groceries cannot be loaded into a truck body that has carried hogs and cattle. A court of sufficient size to prevent congestion, an ample flow of water, and a few coarse brooms, are all that are essential. Better and more efficient means are being provided by the more up-to-date yards.

When the farmer hauls his stock to market, in his own truck, it means that at any time, whether he has one or 200 head he can load at his own door, roll swiftly over the country road at 10 to 15 miles an hour and pulls into the stock yards in time for the early morning market, having driven from a considerable distance in the cool hours of the morning when the hogs or cattle are less affected by the deleterious influence of heat. It is not necessary to wait until one has a carload, or until one's neighbor can add sufficient to your number to make a carload, before shipping. Even then it was necessary to load the hogs into wagons and haul them 5 or more miles to a railroad so that there was considerable shrinkage added to the rail shrinkage.

Time Saver in Busy Season

Formerly when there were a number of hogs on the farm and when field activities were pressing into service every hand and every minute, if the market showed signs of weakening, the farmer would generally decide to rush his hogs in before it got too low. The horses would be taken from the field, where they should have been kept to get the harvest in or the plowing done, a half hour would be consumed getting ready, two or three more hours would be spent on the road in the heat of a summer sun, toiling along at a snail's pace, another half hour would be required to feed the horses in town and by the time the team reached the farm again the best part of the day had gone. The whole distance was only four or five miles. Had it been more there would have been no way to get into town with the hogs in time for the morning market, and quick shipment by rail is a minus quantity.

Now, the truck is called into service for this work, without affecting the field work and without wearing the horses out on the road in the heat of a mid-western summer. Large numbers are moved by truck. Kansas City reports the delivery by truck of several shipments of from 150 to 200 head by a single farmer in a week. They are learning to depend upon the truck even when carload lots could be shipped by rail. The advantages are telling. I talked with one farmer at St. Joseph who made four trips from his farm to the yards with hogs between morning and noon. He was eight miles out of the city, and operated a 1-ton Nash truck.

One of the facts that impressed the writer was the size of the trucks the farmers were using in this and other farm work. For three hours during the busy morning but one truck came into the hog yards that was other than a one-ton job. All makes—but all of one capacity except a ½-ton Fulton, which came from a farm 35 miles distant. There were Republic trucks, Maxwell, Nash, Commerce, Acme, International, Denby and others. All were of 2000-lb. capacity. This fact might be interesting to dealers who sell trucks to stock farmers.

In the little town of Shenandoah, Iowa, last year the implement dealers complain that for every farm wagon sold there were five motor trucks placed on the farms. The farm wagon business is going the way of the old buggy business. When roads are improved farmers within a radius of 100 miles of a market will haul their hogs, cattle, sheep and other products in trucks. Those, who are not doing a business extensive enough to warrant the ownership of a truck, will be served by rural truck routes operating into the market. These routes will be run on schedule and by the use of the return-loads bureau idea the rates will be within reach of everyone.

In 1917 some 56,500 hogs were received at the St. Joseph stock yards by truck and wagon. In 1918 this figure rose to 121,000. The last four months enjoyed the greater part of the big increase which is continuing. On the basis of 70 hogs a car, the number delivered to the yards in 1918 by truck would equal about 1730 cars sent in by rail. To quote the St. Joseph *Stock Yards Journal*, "Marketing stock by motor truck has proven so inexpensive that the popularity of the idea has spread rapidly and in the course of a year or two every farmer within a reasonable range of the stock yards will market a considerable portion, if not all, his stock in this way."

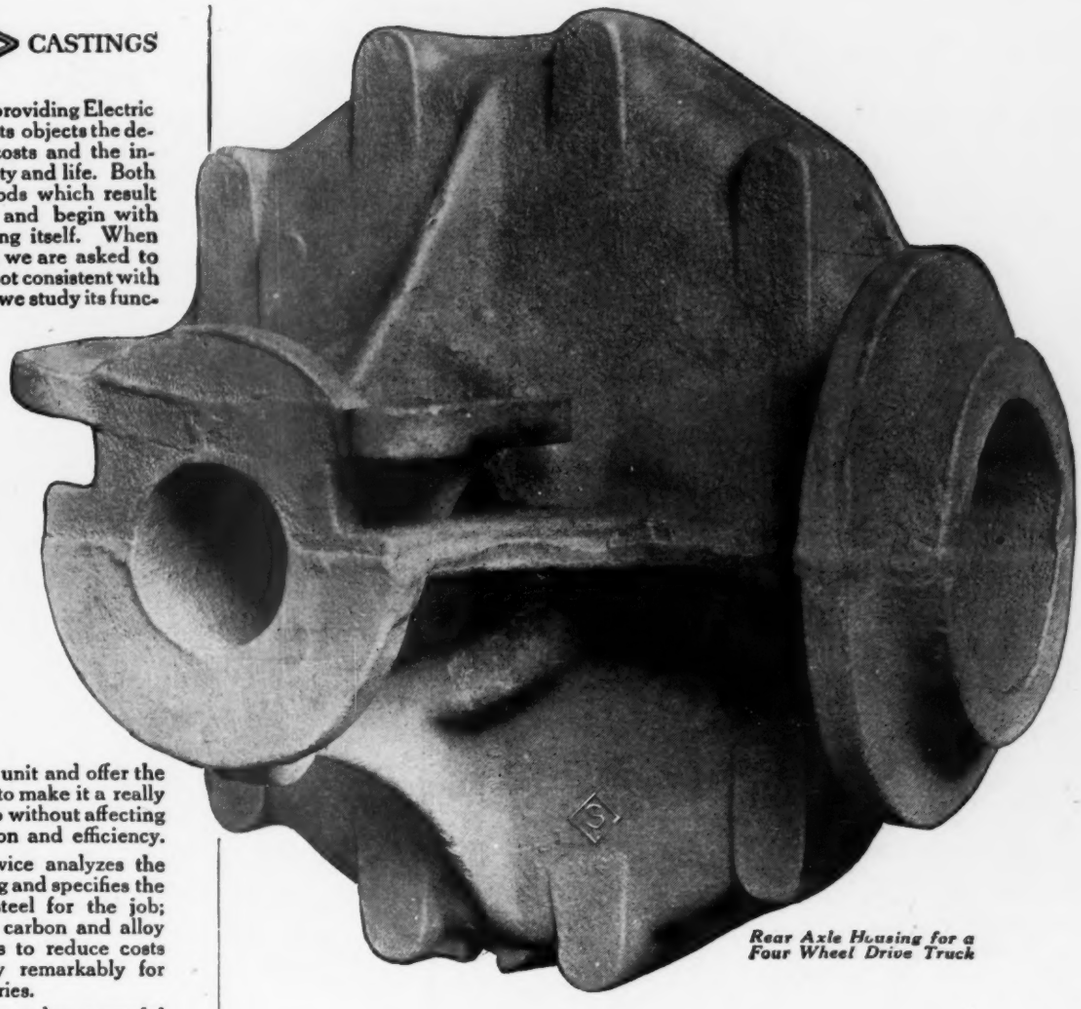
The same increase in receipts by motor truck are being noted at the other mid-western markets. Kansas City, in September, 1918, received 6645 hogs by truck and wagon as compared with 2594, for the same month, in 1917. The facilities at this yard are worse than bad. There are no facilities at all for unloading trucks and, for that reason, many truck-owning farmers choose the other markets where they are well taken care of. Omaha, Neb., is experiencing a steady increase in this field and the Chamber of Commerce, the Bureau of Markets of the Department of Agriculture at Washington, and the trucking concerns, are working for better unloading facilities and a return loads bureau which will have an accelerating effect upon the work. A considerable part of the work at this market is handled by trucking companies operating from the surrounding towns. Cattle and hogs are being hauled into the Omaha market for the farmers in an ever increasing volume. Plans are being pushed forward at this city for the standardization of rates that will be reasonable and the operation of the routes on a reliable schedule which will greatly stabilize and popularize the work, giving it a surer foundation and greater public confidence.

Jones Gear Co. has recently been organized at Cleveland, with a capital of $800,000, and will erect a plant for the manufacture of differential gears, clutches, cut gears and transmissions. Frank H. Jones, who was chief engineer of the Warner Gear Co., is president; R. L. Queisser, vice-president and A. R. Callow, treasurer.

Wood Hydraulic Hoist & Body Co., Detroit, Mich., announces the opening of a branch at 1335 Hyde Park Ave., Hyde Park, Mass. C. A. Monahan is manager. A complete line of parts, as well as hoists and bodies, will be carried at this branch.

SIVYER CASTINGS

The Sivyer Service of providing Electric Steel Castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency.



Rear Axle Housing for a Four Wheel Drive Truck

Secondly, Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly, Sivyer Service makes a careful study of the pattern and molding problems involved, for improper gating and insufficient risers are often the greatest wasters of machining labor and metal.

Fourthly, Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short, the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little even on the natural freedom of electric steel from occluded gases and on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.

AFTER certain manufacturers had experienced expensive difficulties in getting housings for the rear axles of four-wheel-drive trucks, they came to us. By the scientific use of risers we eliminated the difficulties others had had in getting the bosses of this casting uniformly sound. By our solution of the gating and core problems involved, we freed the castings from shrink holes and cracks that had previously made machining costs high. The successful solution of every factor in the molding problems involved in this casting, is typical of the thoroughness which has made the market for Sivyer Castings a national one.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

The Truck Salesman Slips Her Into High

He is Convinced That Rural Communities Are Beginning to See the Advantages of Motor Haulage as Against Hoss-Power or Stubborn Mules. Stubborn Communities and People That Were Won Over by Tact

By W. LIVINGSTON LARNED

IT was a nice, new branch office in a small farming community and the demonstration truck stood on the floor, where it had been recently rolled, in honor of the grand opening.

And there, in the doorway, stood Happy Jack Martin, traveling salesman for one of the largest truck houses in the country. His red face beamed as he saluted Brown, the branch manager.

"This your first day?" Martin demanded.

"Third," was the laconic response.

"What success?"

"Nothing to speak of," and young Brown's brow wrinkled, "this village makes me sick. You'd think the opening of this place would cause a ripple. I ran two column newspaper announcements for a week, in the Daily Democrat and my location here, on Main Street, en route to the Highway, would seem to demand attention, but—nothing doing. The folks appear to accept it as a matter of fact. Not even the truck there appears to move them. Occasionally a chap stops and looks at it, but, take 'em rank and file, and they haven't enough curiosity to want me to roll it out and demonstrate. Office chair dope on this farming community stuff, as related to trucks, is all bull. I thought the same before I actually took the plunge—I said to myself: 'It is the first truck office that was ever in the old town. These folks have haulage problems that worry them. When I get that nice, new machine on the road in front of the building, I won't be able to hold back the crowds. They will just naturally want to see how it works.' And no such thing happened."

"Luke warm?" suggested his companion.

"Not even a simmer," was the grumbling reply, "and I confess I'm keenly disappointed in my own town. It seems satisfied with old methods and stupid inefficiency. But what can you do?"

Happy Martin deliberately climbed up on the truck seat, and took the wheel rather lovingly in his pudgy hands.

"But something can be done," said he.

"Extend liberal credit, and give one away if the owner will turn it into a demonstration car?"

"Nothing like that. The trouble with you is a common trouble. You don't seem to realize that salesmanship and merchandising methods have changed rapidly in the past five years. And now that four million soldiers are back into business harness, or soon will be, the competition is keener than ever. The old order of things won't go, Sonny."

"What do you mean?"

"Goods—and that includes trucks—are not sold by waiting for customers to come in and sell semselves. It's a case of creating an appetite for what you have to sell. Entirely outside the narrow zone of your own little hole in the wall, you must start a sort of sales fever, that will bring them here to get cured. The wise ones are doing it, too. They are doing it by thinking in terms of the whole darn county, rather than their few hundred feet of store space.

"It may interest you to hear some of my own personal experiences and observations. This makes my sixth month on the road and the folks have asked me to cover small towns in rural communities. I confess I have enjoyed it. For one thing, I have found that the people in many of these places are as quaint and as unprogressive and as settled in their ways as they were twenty-five years back. They are in the backwater of Progress, as it were.

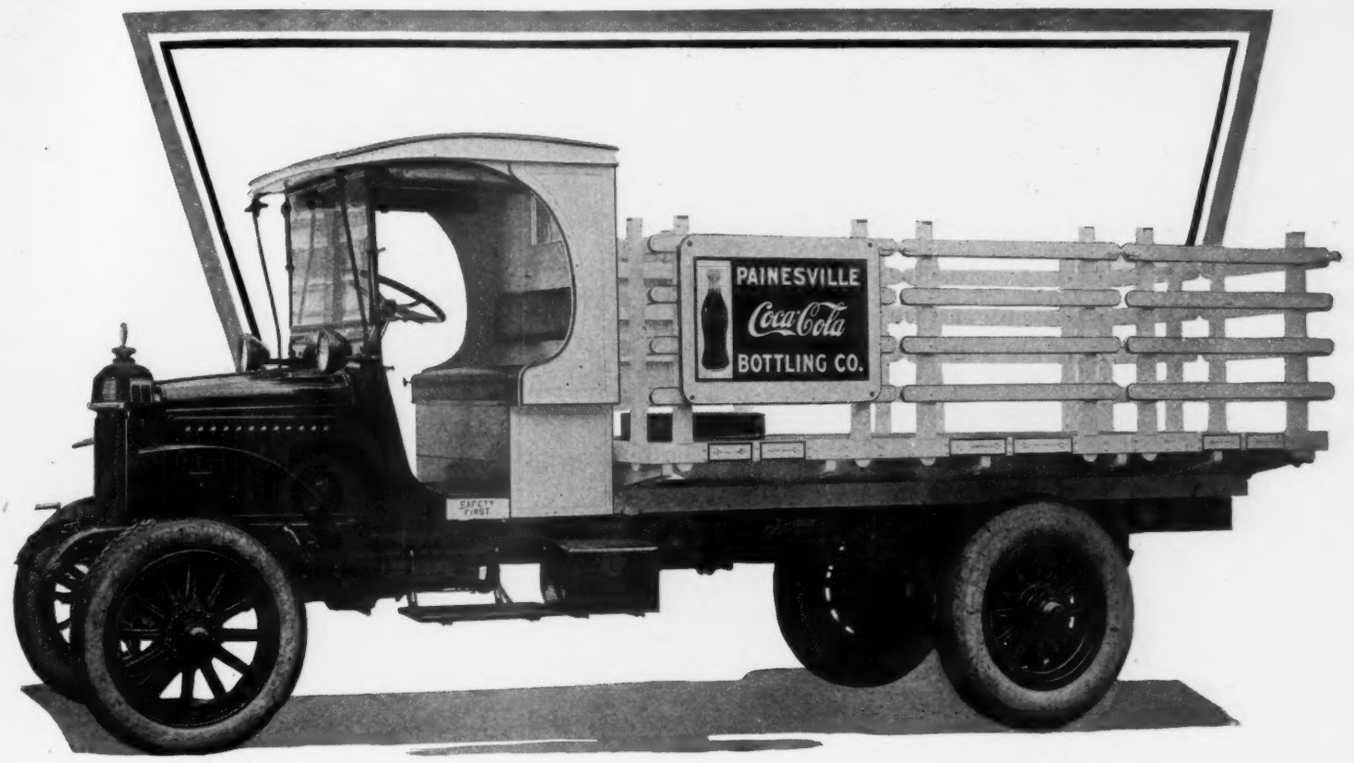
"Over in Lenox I was interested when the Lockhard brothers told me how they were breaking in hard territory. It is a dairy farming area—many large and small establishments, and the roads are none too good after you get back into the interior. Heavy rains this past Spring have made them worse.

His Whole Family and His Help Were in on the Deal and Lockhard Eventually Sold Him a Baby Fleet of Six Trucks

"There is a great deal of haulage back and forth and it's sometimes fifteen miles to the railroad sidings where the milk is taken on every morning. But it came slow. And they deliberately set out to beat the game by clever subterfuge, honest trickery and all that sort of thing. Here are some of the things they did: Ralph Lockhard took a new truck out that was suitable for the dairy business, and visited a moderate sized place a few miles from town. He did not mention trucks or his business at all when he stopped off, but asked the boss of the place to show him over the acreage and the buildings, as he was interested in the dairy business. The machine was rolled right up into the lot. Ralph went all over the farm, although he knew dairying by heart, having lived in that county for years. When he came back from the pasturage at noon, the wife and two daughters of the dairyman were looking at the nice, new, shiny truck, and several farm hands were examining it, too. Casually, Lockhard began to explain about this and that. Never once did he attempt to force a sale. He made them start their own interest in the proposition.

"Knowing that particular dairyman as I do, I'm sure you could never have deliberately gotten him into a salesroom in town. But the machine was taken out to him in a shrewd way, and that got more than him interested. His whole family and his help were in on the deal. Lockhard eventually sold him a little baby fleet of six trucks.

"There is Conklin, over in West Hills. I'll bet you can't guess how he got his tough territory started. He was always ready and cheerfully willing to take picnic parties out in that community. He allowed it to become known that his machines were at the disposal of the folks there in his county. All they had to do was ask him. He even went to the Board of Trade and posted his notice. If there was a circus in town or a tractor demonstration or a parade, Conklin would send his trucks out for the country folks and bring them into town. It was quicker and easier. I guess he has had fifty picnic parties over to Big Rock Lake. He would even at-



10 years of real truck-building experience protect Atterbury dealers

10 years of truck making experience behind each ATTERBURY

The tenth milestone in Atterbury truck-building is a matter of *pride* to the Atterbury organization.

But it is a matter of *money* to Atterbury dealers.

For ten years the Atterbury has been piling up net profits for dealers.

Today Atterbury dealers are making more money than ever because they have behind them a record of satisfactory service to owners second to no truck in the world.

Investigate this profitable dealership today.

Write for the 10th anniversary catalog of Atterbury motor trucks.

ATTERBURY MOTOR CAR CO., BUFFALO, N. Y.

ATTERBURY

MOTOR TRUCKS OF MAXIMUM SERVICE

tend to barn dance crowds and the like.

"It wasn't necessary for him to talk his trucks. He drove them himself, however, whenever he could, and he was not afraid of loads or hills. The old geezers would sit up beside him or dangle their feet out behind and thrill at the sight of that mile-covering miracle. The trucks were demonstrating what they were and what they could do, all the while, without anybody quite realizing it. Moreover, Conklin was building up local friendship prestige. Everybody liked him and was thankful to him. It got a big community acquainted with trucks.

"When you have reached the point where you are selling as big an article as a truck, practical demonstration of it is the greatest selling agent, I don't care what you say. But, oddly enough, it isn't easy to find an opportunity to demonstrate. You can't wait for a farmer to come to your office and then take him out. For he won't come.

"I know a chap in a little Pennsylvania town who has put it over big by helping folks out. He is an expert at emergency cases, if you know what I mean. A farmer or a dairyman or a manufacturer has trouble with his horses—they take sick—the roads are particularly bad for long hauls—hired men leave or get off their feed. This truck chap offers to help out, at no cost. Glad to be of service. He will go out nine or ten miles from the village and bring in thirty cans of milk for a dairyman—do it with a smile on his face. The trip is made quickly and easily, and the farmer can see the operation.

"In one section the small manufacturers and farmers were complaining because they were getting rather indifferent service from the interurban lines. The electric railway knew they had it all their own way and were uppety. The local agent of a truck house studied the road maps of that country thoroughly, so that he knew them by heart. Then he went to the users of the interurban service and asked them to allow him to show them exactly how and why, in a truck, he could reach various points quicker than the interurban, at a much smaller rate of cost. It was all a question of short cuts and good roads. He reminded them, incidentally, that they could be their own interurban lines, with no aggravating arguments. The scheme worked perfectly, in the face of the fact that those fellows had never thought of any transportation service except the electric lines.

"Still another young friend of mine worked an ingeniously shrewd, yet obviously legitimate stunt. He always had one demonstration truck out on the surrounding country roads. You would see it everywhere, up and down hill, across this stretch of country and that—a sort of rambling gypsy of a truck. It was out in all kinds of weather, too, mind you.

"The man who drove it was a good mixer. He would manage to stop and talk with folks he'd meet on the road. He never talked truck, however, unless questions were asked. There seemed to be psychological value to that handsome truck rolling through the community. Everybody knew it—and in a friendly way. There was no place too remote for it to go. The driver found that people would ask their own questions. And there was always the vivid contrast between the modern truck and the slow-going horse-drawn vehicle. That branch manager wanted to have trucks seen in motion, on all the highways of his territory. He knew that the farmers would see it—and do some thinking, in spite of themselves.

"Why, say, I have seen a remarkable business developed in the South, due to the energy and brains of a truck salesman who had vision. He started in to compete with the express companies. The latter had started a progressive newspaper campaign of direct-from-the-farm-to-you appeal. There was nothing particularly brilliant to the stunt—merely a case of reminding the folks in the larger towns that they could deal direct with the farmer and secure farm truck at much lower rates—and always strictly fresh.

"But complaints began to come in. Parcels post and express charges were heavy. The time service was poor. Goods spoiled en route. Despite this the scheme made rapid headway.

"This truck chap gathered a crowd of the farmers together and talked it over. It was his suggestion that they buy a battery of trucks and bring their own deliveries into the towns each day. But he had the costs figured out to a hair's breadth. And it was to make them absolutely independent.

After much delay the trucks were purchased and the ball started rolling. It grew through the war, and it is still rapidly progressing. Mileage means so much less to a farmer now than it did a few short years ago. He is getting the idea out of his head that thirty or forty miles means an impassable trade barrier.

"Say, if you are interested in truck demonstration, you should have been with me for two weeks recently, while we were helping distribute Victory Loan posters for a Federal Reserve District. I never realized myself, before, what trucks could do, in worming their way through big territory easily. It would have taken the railroads or interurban lines a century.

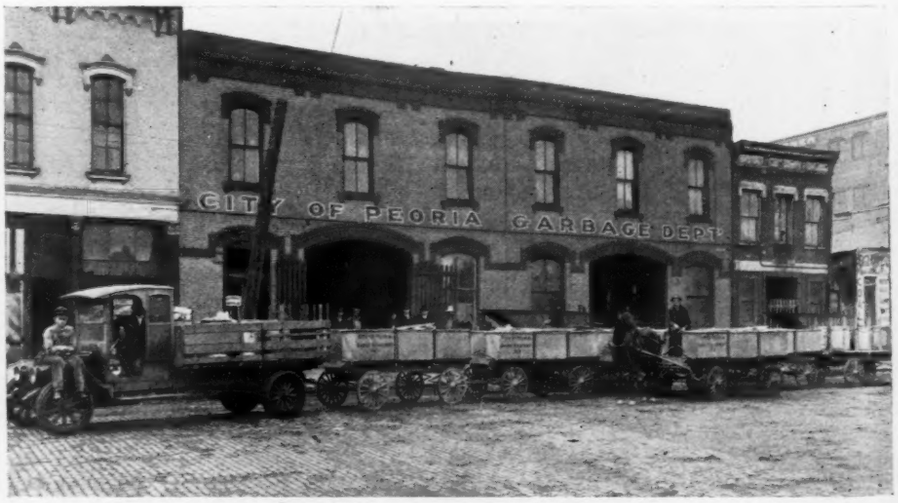
"We loaded up three trucks with those heavy one sheets and started out. The tour meant taking in every sort of a place, from the cross-roads establishment to the larger places. And in each town or locality there was considerable running around to do, for the sub-committeemen wanted a bunch left here and and another one there. It was all handled so easily that I was proud of my own business. That marvelous distribution of posters could never have been swung in any other way."

"It's your big idea then," observed the discouraged branch manager, "to mix human interest and the fraternal instinct with salesmanship. Not only have the truck, but create the market for it?"

"Sure," was the laconic response, and Happy Martin swung her into high with an imaginary twist of his wrist, as he sat atop the shiny new truck, "I passed your place several times this morning and you were always sitting in her, or walking up and down, grumbling to yourself. Get a good, live office helper and then climb aboard one of your own trucks. Folks who sell stuff nowadays must go out after customers and markets."

Peoria Has Motorized Garbage Removal System

Peoria believes that it has solved the garbage collecting problem by utilizing motor trucks and trailers. After a thorough test of the new system, the authorities are now ready to commend it to all other municipalities. Many inquiries are being received regarding the plan. The city has done away with all charges for the removal of garbage and only requires the householder or business institution to separate the wet from the dry garbage. Two cans must be provided by each residence or business institution. One is reserved for waste from the table which can be consumed by hogs, while the other is utilized for ashes, tin cans, etc., which cannot be burned in stoves or furnaces. The trucks haul specially constructed trailers. These trailers carry a number of rectangular



The Introduction of a Motorized Garbage Removal System Has Resulted in One Year in a Saving to the City of Peoria of $5,912

tin receptacles into which the various kinds of refuse are dumped as the truck and trailer moves from house to house, or store to store. As soon as trailer is fully loaded, it is left at a designated corner, and an empty trailer picked up by the truck and carried away for a fresh load. In the meantime, employees of the city garbage department empty the cans of the ashes or other refuse, while a company which pays the city $2 per ton for the edible garbage, empties the receptacles and hauls the refuse to the feed yards in the rural districts.

In 1918 the city realized $5912 from the sale of this garbage, and this year it is believed that the sum will be increased to $10,000, going a long way toward payment for the vehicles and wages of the men engaged. The separation of the ashes gives the city desirable material for filling in mudholes in the dirt streets and low places. Formerly, when the garbage was mixed with the ashes, residents naturally objected to dumping such refuse in front of their homes, and the disposal of it became a problem. Ashes furnish an ideal fill for low places in unpaved thoroughfares, and under the new system, the street department has greatly improved the streets in the suburban districts. The trucks keep up a continuous movement over designated routes, while the trailers, when loaded, are left at convenient corners at some central point in each district, an empty trailer being picked up as soon as one that is full is uncoupled. The system has now reached a point where it is being operated without friction, and the city refuse is picked up promptly and there is avoidance of the delay that was formerly so exasperating to all householders, business institutions and factories. The utilization of the waste in feeding hogs thus increases the food supply and correspondingly decreases the cost of collection for the city. The improvement of the dirt roads by the separation of the ashes is also a feature that is regarded as one of great importance. The new system promises to be permanent and soon self-supporting.

Motor Trucks Haul News-Print Paper Cheaper Than Horses Can Deliver It

By A. V. COMINGS

ONE standard type of heavy haulage that may be seen in every large city in the country is the delivery to the various newspaper offices of the huge rolls of paper on which the millions of newspapers are printed daily. The transportation of this paper from car or warehouse to the various newspapers is a severe test on any hauling equipment, be it of the motor truck or horse truck type. For the paper is a dead weight, it is extremely heavy, and it is very easy to overload the medium used for carrying it.

St. Louis furnishes one of the best cost comparisons in the United States on this type of haulage, for the Perkins Transfer & Storage Company, which delivers the rolls of paper to all the large St. Louis newspapers, uses both motor trucks and horse-drawn trucks, and as the company keeps accurate cost records, their figures are of interest to the trade. And their cost records show that a motor truck can deliver this print paper approximately 65 cents per roll cheaper than it can be delivered by drays.

The company is using two five-ton Service trucks in handling news print to the various offices, and five three- or four-horse drays on similar work. Of late four horses have been used almost exclusively as there has been a lull in transfer work in St. Louis and the company used its idle horses in this work to keep them exercised.

Each motor truck carries nine rolls of print paper at one load, each roll weighing 1350 lb. This gives the trucks a load of six tons, and as the trucks are built to stand a 20 per cent. overload, no apparent harm has come to them through this extra weight. The horse-drawn trucks carry the same load.

The haul from the warehouse to the various newspaper offices is 1¾ miles each way, and from the warehouse to Broadway, which is on a level with the downtown portion of St. Louis, there is a sharp grade which calls for all the strength the horses can put forth to land their heavy load on the higher ground. The motor trucks make this hill with ease. Most of the trip is over rough city pavement, either cobble or asphalt.

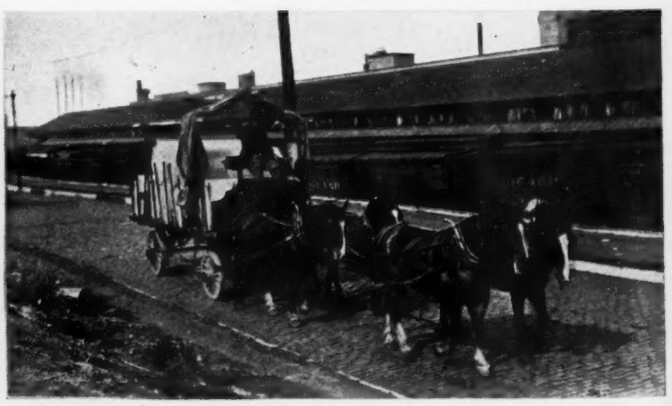
Eight round trips per day are made by the motor trucks, while the best the horse trucks can do is four round trips in the same time.

Cost figures kept on the motor truck haulage, including repairs, insurance, 20 per cent. depreciation, etc., show that it costs $1.85 per roll to deliver the news print to the various offices, while with the horse-drawn trucks it costs $2.50 per roll. This figure takes into consideration all expenses incidental to the horse-drawn vehicles, including repairs, insurance, depreciation, etc.

It will be seen from these figures that two horse-drawn drays are required to do the same amount of work per day that one five-ton motor truck does, and the motor truck does the work cheaper by $46.80, which is some saving, considering that the St. Louis papers keep these drays and motor trucks working almost every day in the year.

The trucks are used in delivering the paper only where delivery is made from the street, as it has been found that where delivery is made in an alley, the trucks are often delayed through congestion of traffic in the narrow places, and this cuts down greatly their economy.

The Perkins Transfer & Storage Company is one of the big and progressive transfer companies of St. Louis, and its experience with motor truck haulage on most kinds of work is satisfactory.



This Five-Ton Service Motor Truck Delivers Just Twice the Number of Rolls of Paper per Day That This Four-Horse Dray Delivers, and Does It 65 Cents per Roll Cheaper. Both Vehicles Are Used in This Work by Perkins Transfer & Storage Co., St. Louis

THE FEDERAL BUREAU OF MARKETS reports higher depreciation charges on trucks than is necessary. *Good Tires* save trucks, cut down wear and tear and reduce depreciation.

FISK CORD TRUCK TIRES keep your trucks working more steadily and keep them in service longer.

THEY PERMIT sustained running at speed without damage to the truck itself, or damage to perishable or fragile freight.

KEEP ACCURATE cost sheets.

WITH FISK TIRES your operating costs are less: it costs you less per pound of freight per mile hauled. Fisk Tires last longer. Save stress and strain on working parts of the truck.

NEXT TIME—BUY FISK.

FISK TRUCK TIRES

LEGAL DEPARTMENT

Injuries to Ride-Stealing Boys

The owner of a motor truck is not to be held liable for injuries sustained by a boy while riding or attempting to ride upon the truck, if the driver was unconscious of the child's presence or peril. And drivers of such vehicles, although legally bound to exercise a reasonable degree of care for the safety of those trespassing boys whose peril is or ought to be discovered, are not bound to maintain constant vigilance in driving along streets.

The California Supreme Court lately applied these principles in the case of Allred vs. Pioneer Truck Co., 176 Pacific Reporter, 455, in which suit plaintiff was defeated in an attempt to recover damages for death of her nine-year old boy who was run over by one of the rear wheels of a truck.

There is an old established rule of law that where one maintains a situation which is naturally attractive to children, and yet dangerous (for example, a railway turntable) there is a duty to anticipate and guard against juvenile trespasses. It was sought to apply this principle to the California case, but the Supreme Court said:

"Very few vehicles operated on highways are so constructed that boys cannot climb upon them or some parts thereof, and the proposition advanced, carried to its logical conclusion, would mean that the driver of an automobile or other vehicle whose duty requires him to observe the road along which he is traveling and to attend to his motive power must be Argus-eyed or accompanied by outriders charged with the duty of seeing that small boys do not find lodgment upon the running boards or other parts of the vehicle, or approach a position of danger, where they may, as in this case, fall under a wheel. The law does not impose such duty on one lawfully operating a vehicle along a public street.

* * *

"It is a matter of common knowledge that boys are prone to steal rides on all sorts of vehicles propelled along the streets, but it would be an intolerable rule that imposed upon the owner of vehicles the duty of employing guards to keep boys so inclined to trespass, at a safe distance therefrom."

The case suggests the thought that the long whip of the old horse-driven vehicle, being a non-existent part of the equipment of a motor truck, has no terrors for the juvenile adventurer who attempts to steal a ride at the rear.

Motor Transportation of Passengers

One of the peculiarities of the law lies in the point that, although, as a general rule, one's liability for causing personal injury to another depends upon the accident being found to have occurred through his failure to use a **reasonable** degree of care to avoid the injury, a higher degree of care is imposed upon carriers of passengers for hire. It is generally held by the courts that a common carrier of passengers must use a **high** or the **highest** degree of care for the safety of his passengers.

As transportation of passengers was largely restricted to railway and steamship lines until the advent of the motor vehicle, the question of the degree of care required of carriers was for a long time almost wholly confined to rail and water carriers. But as the motor vehicle takes its place as a common means of transportation, the trend of judicial decision is to hold its owner to the same strict accountability for the safety of passengers as applies to the old means of transportation.

An example of application of this legal principle is afforded in the recent decision of the New Jersey Court of Errors and Appeals in the case of Schott vs. Weiss, 105 Atlantic Reporter, 192, in which plaintiff was awarded damages for injuries sustained in alighting from a motor bus operating between Newark and Elizabeth. Plaintiff had arisen from his seat preparatory to alighting at a stop, when he was violently thrown from the car when one of the front wheels struck a rock in the road. Affirming judgment in plaintiff's favor, the Court of Errors and Appeals said:

"It is urged that a jitney bus operator is not a common carrier of passengers. This is not so in point of law. * * * Common carriers of passengers are those who undertake to carry all persons indifferently who apply for passage. To constitute one a common carrier of passengers, it is necessary that he hold himself out to the public as such. As a common carrier, the defendant owed the plaintiff, who was a passenger for hire in the jitney bus, a high degree of care for his safety. * * * Whether that degree of care was exercised for the plaintiff's safety, under the circumstances of the case, was a jury question."

Good Roads Are a Necessity—Boost!

Liability of Motor Hauling Company

The Appellate Division of the New York Supreme Court has reversed a judgment against the Motor Haulage Co., New York, for damages in favor of one De Perri who was injured while riding on one of the company's trucks. (173 New York Supplement, 189.)

The company furnished trucks, drivers, gasoline and oil to a road construction company for use in hauling materials from the latter company's plant to the points where the same were to be used. Plaintiff was employed by the construction company and after completion of a day's work was permitted to ride on one of the trucks on its way to the garage in Yonkers, where it was kept while in use under the haulage contract. Plaintiff was riding behind the chauffeur's seat, holding himself in position by grasping hoisting cables of the truck by means of which the truck was dumped, on occasion. The chauffeur apparently set the hoisting apparatus in motion, deliberately and inexcusably. This resulted in plaintiff's hand being caught and injured by a wheel on which the cable revolved.

It is decided by the Appellate Division that no case of liability was made out against the defendant haulage company, because it was not liable for any malice of the chauffeur in setting the hoisting mechanism in motion, as that had no relation to the running of the truck to the garage after the day's work was done, and because the evidence showed that at the time of the accident the chauffeur was for the time being the employee of the construction company, so far as concerned the carrying of that company's employees, as the defendant company had not undertaken to do that.

Champion Spark Plug Assumes Federal Tax. The Champion Spark Plug Co. has notified its jobbers throughout the United States that it will assume the Federal excise tax on Champion Spark Plugs, and that the tax, therefore, need not be included in quoting prices to customers.

Glouster Supply Co., 1308 Racine St., Cincinnati, Ohio, has taken the distribution of Curtis tires for Cincinnati and the surrounding territory.

General Tire & Rubber Co., Akron, Ohio, announces that the mileage guarantee on the General "Jumbo" tire has been increased from 5000 to 7500 miles. The tire sells for $31.90.

HOFFMAN PROCESS

Avoiding Seams and Laps in Raw Steel

Obviously, no ball can be superior to the very steel that forms it.

To avoid possible defects in Hoover Steel Balls, due to defects in the steel, rigid tests and inspections are run by the complete research and control laboratories.

In the great Hoover plant there have been developed the only laboratories of their kind in the country. No other ball manufactory exercises equal care in elaborately testing raw steel to fortify against possible weaknesses.

Hoover Steel Balls are made from either wire or rods, dependent upon the size. Faulty manufacture of raw steel at the mills often produces stock with minute surface imperfections which escape inspection at the mills. These defects are so minute that they cannot be detected with the naked eye. Acid etching in the Hoover laboratories makes them visible.

"Fire cracks" is what they are called in the ball-making industry, but that is in reality a misnomer. Contrary to the general belief, hardening does not cause these particular cracks—the damage is inherent in the raw steel as it is received from the mills.

Detecting seams and laps in raw steel is but one of the important findings of the efficient Hoover laboratories. The work of this department is important, it is vital to the maintenance of the high quality of Hoover Steel Balls. To determine a defect in the raw steel ***before*** it enters the production department, serves to sustain a high uniformity of quality balls, to economize by avoiding wastage and to insure complete dependability of output.

Photograph of a perfect ball blank

Ball blank with surface seam or lap which obviously cannot be finished into a perfect ball. The detection of such defects is but one of the important functions of the Hoover research and control laboratories.

Hoffman Process

Hoover Steel Balls are produced by the Hoffman Process; only two other ball-makers in the world possess the rights to use this method. It eliminates the uncertainty of human accuracy—it produces accuracy in each and every Hoover Steel Ball.

Hoover Steel Ball Company
Ann Arbor, Michigan

HOOVER
STEEL BALLS

Supplying Intensive Bearing Service

By A. K. HEBNER, General Manager, Bearings Service Company

TODAY there is not a single out-of-the-way corner in the whole United States more than twenty-four hours distant from a branch or authorized distributor of the Bearings Service Company, the national service representative of the Hyatt Roller Bearing Company, the Timken Roller Bearing Company and the New Departure Manufacturing Company. What "Bearings Service" means to the motorist may be emphasized by consideration of the fact that the bearings manufactured by these three companies are in use in a great number of American built motor trucks, tractors and passenger cars.

While in no case is "Bearings Service" more than a full day away from the truck or car owner, in most cases this service is available immediately, or within a comparatively brief interval of time.

Prior to the formation of the Bearings Service Company, the Timken, Hyatt and New Departure Companies were required to maintain separate service organizations. These separate service organizations were unable to meet the service demands upon them in cases where stock, careless treatment, insufficient lubrication and other causes, which are due to accidents or to neglect, made bearings service necessary.

Now, however, it is no longer necessary for the motor car or motor truck owner to lay up his vehicle for anywhere from a week to a month, until new bearings come from the car manufacturer's separate service organization.

When it is considered that the Bearings Service Company was organized in July, 1916, and did not commence active operations till September 7, 1916, and has, therefore, been actively engaged in giving bearings service only a little over two years, the thorough way in which the Bearings Service Company has covered the nation assumes the importance of a remarkable and noteworthy record.

The company now has over 750 distributors, dependent on twenty-two branches for bearings; and plans to have, before its distributor organization is finally perfected, between 1100 and 1200 distributors, placed in what may be termed "strategic" centers. It is thus that "Bearings Service" service will be brought within a few hours of even the most isolated cross-roads sections.

The necessity for "a service that serves" resulted in the organization of the idea upon which the Bearings Service Company was founded—an idea similar to that of the Union Railway station, where competing lines enter a city. Instead of as many depots as there are lines, or, in the case of bearings manufacturers, as many service branches or distributing stations, one central branch or distributing station in a town cares for the work for all. The Bearings Service Company, however, is entirely separate in its incorporation from the companies whose products it handles. It is the practical union of the service departments of manufacturing competitors so that their service to the public may be more far-reaching, effective, speedy and economical.

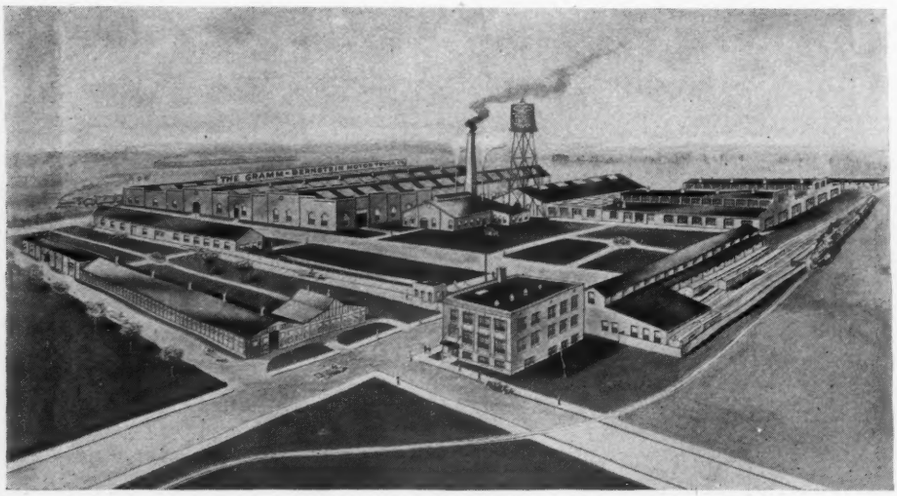
Tabulated Data Keeps System Up-to-Date

The service system which the Bearings Service Company has built up, with the aid of the three bearing manufacturers it represents, gives prompt service on any Timken, Hyatt or New Departure bearing that has ever been used, no matter how old the machine. The key to this system is the elaborate data which shows not only the numbers and sizes of the bearings for any particular car, but also the places where they go. This data is maintained uniformly and up to the minute in all branches. No matter what the date of manufacture of any particular car, by referring to this data the exact type and size of bearing needed for installation can be ascertained. Since a complete assortment of Hyatt, Timken and New Departure bearings is carried in twenty-two logical distribution centers, the particular bearing can accordingly be supplied without delay.

The branches and distributing stations all have their tales of quick service given. Right at headquarters in Detroit is the case of the Dort Motor Car Company, of Flint, which called on long distance telephone and wanted two bearings for a government experimental truck that same day, during the war. Within two hours—as soon as the next train left—this branch had a man on the way to Flint with the bearings.

A naval lieutenant directing an overland train of motor trucks carrying mine anchors drove up to the Detroit branch one night. He was in need of bearings service immediately on one of the trucks. The front axle housing bearing needed replacing. He was given immediate service, which enabled the truck train with its important cargo to proceed on its way without delay.

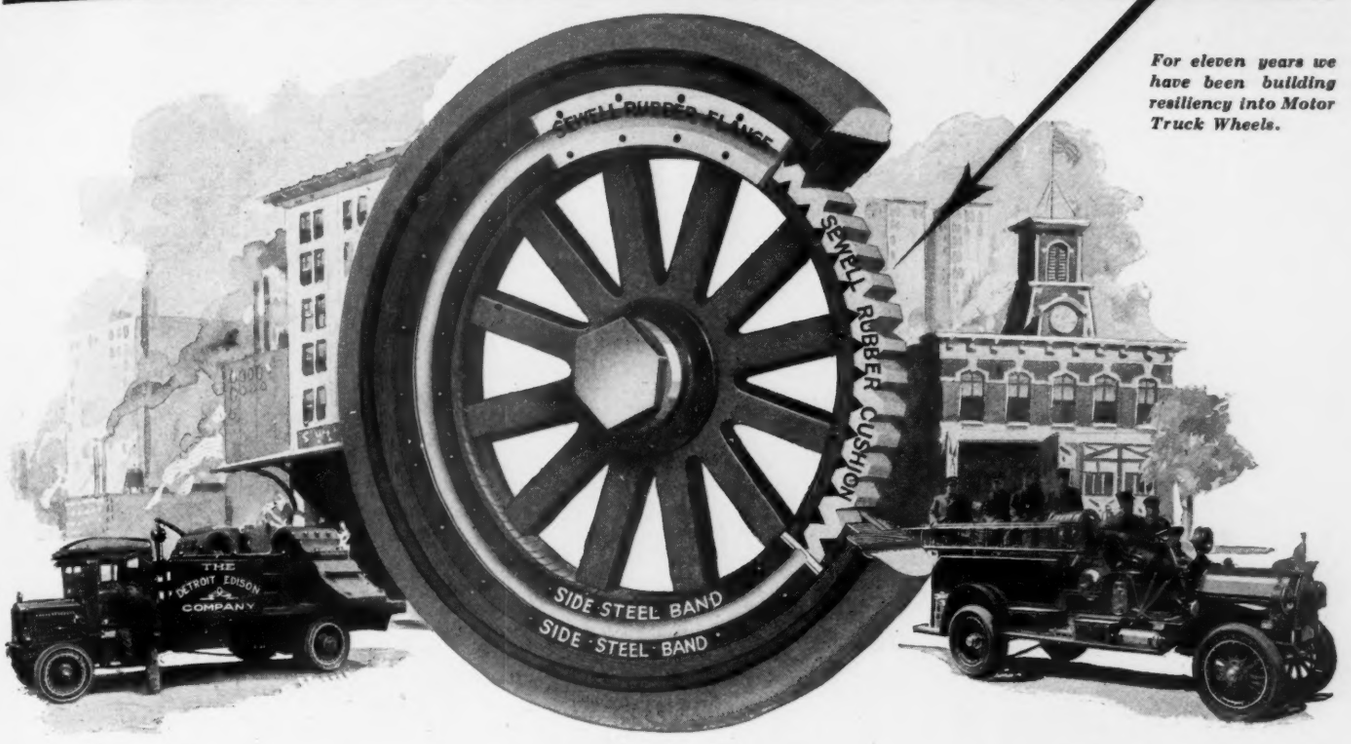
At a time when bearing service was so vital in order that motor trucks might be kept in commission till automotive vehicle manufacturers were again back in regular production, when they could be replaced, it was the company's object not to sell in quantities, but to conserve its stocks so the garages could look to it for service—and get service. This policy will be continued whenever necessary for prompt bearings service. As the authorized service representative of the Timken, Hyatt and New Departure companies, the company is of course in a most favorable position to obtain material—a feature which at times is of the utmost importance. The company feels that it is doing much to keep industries running, for it supplies bearings not only to motor trucks, motor cars and tractors, the operation of which is so vital to speeding up of post-war work and food production, but also to four mills and other milling and manufacturing industries which use machinery equipped with anti-friction bearings.



Bird's-eye View of the Plant of the Gramm-Bernstein Motor Truck Company, Lima, Ohio

The new administration building, shown in the foreground, was completed three months ago. It is of pressed white brick, and the executive offices, as well as the sales, cost, accounting, purchasing and engineering departments are located in this building. The testing department is shown in the left foreground. In the center of the picture are shown the power plant and the new water-tank. Beyond the power plant, on both sides, extend the factory buildings proper, including the chassis assembly floor, machine shop, stockroom, body department, frame department and paint shop.

The Resiliency is Built in the Wheel



For eleven years we have been building resiliency into Motor Truck Wheels.

Sewell Cushion Wheels

If you are familiar with what constitutes truck efficiency and truck economy, you know what Resiliency means to the Cost and the Life of the Truck.

Resiliency offsets Vibration, the destroyer of the delicate truck mechanism, motor, axles, transmission and frame.

You can get a certain amount of this all-essential Resiliency from the tires. And the price you pay is the wear of the tires, and the cost of tire destruction.

Is not the truck-wheel itself, then, the logical place for this all-essential Resiliency? Is it not scientifically sound and scientifically inevitable that this all-essential Resiliency be Built in the Wheel of the Truck? Is it not logical that this all-essential Resiliency can and should be made to conserve tires, instead of consuming and destroying them?

That is precisely what the Sewell Cushion Wheel really is—a wheel of rubber within a wheel—a wheel that carries its own roadbed with it—a wheel that eliminates friction, and, so, eliminates wear—a wheel that takes from the tire the burden of Resiliency, and so reduces tire wear and tire cost—a wheel that adds years to the life of the motor truck and dollars to the "ton-mile" profit of truck operation—and a wheel, withal, that is *guaranteed for five years.*

Eleven years ago we decided that the solution of the Problem of Resiliency must be found in the truck wheel. For eleven years we have been designing, manufacturing, perfecting Sewell Cushion Wheels. Today, the best evidence we have to offer of the efficiency and economy of the Sewell Wheel is the testimony of the largest truck operators in the country.

On June first there were 26,000 Sewell Cushion Wheels in operation. It is significant that 850 firms in 135 American cities have re-ordered Sewell Wheels. A few of these are Marshall-Field & Company, 86 sets: Sears, Roebuck & Company, 48 sets; Cincinnati Fire Department, 30 sets; Boston Fire Department, 50 sets; Crane Company, 61 sets; Bell Telephone Company, 68 sets; Liquid Carbonic Company, 43 sets; Edison Company, 25 sets.

The experience of these Companies proves the scientific accuracy of the Sewell Principle—

"The Resiliency is Built in the Wheel."

On June 1st there were 26,000 Sewell Cushion Wheels in actual operation

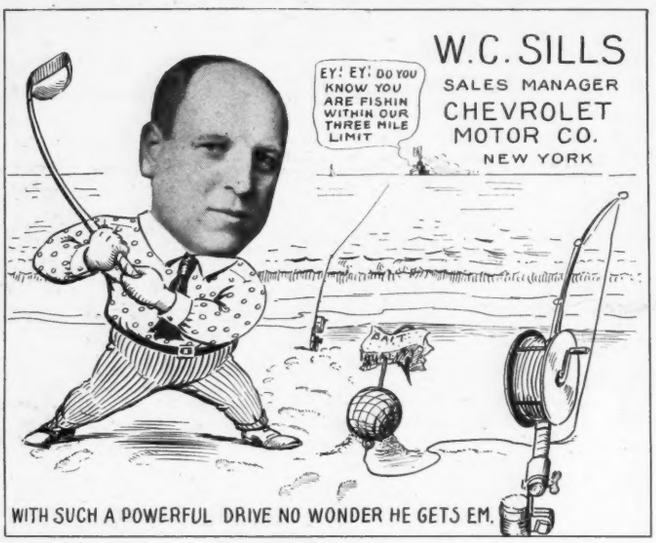
The Sewell Cushion Wheel Co., Detroit, U. S. A.

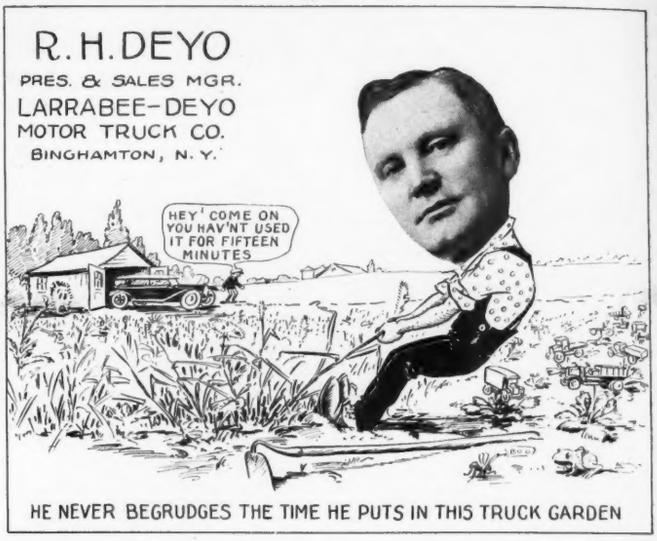
Branches:

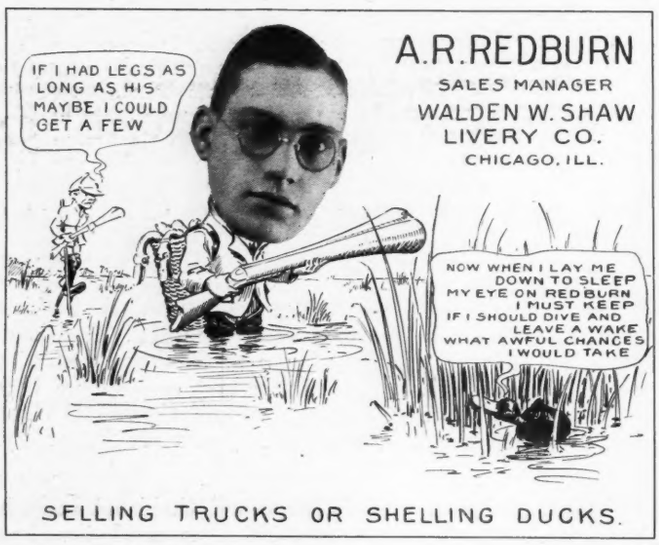
Atlanta, Ga.
Baltimore, Md.
Boston, Mass.
Buffalo, N. Y.
Chicago, Ill.
Cincinnati, Ohio
Clarksburg, W. Va.
Cleveland, Ohio
Columbus, Ohio
Denver, Colo.
Indianapolis, Ind.
Kansas City, Mo.
Los Angeles, Calif.
Louisville, Ky.
Minneapolis, Minn.
Newark, N. J.
New York, N. Y.
Philadelphia, Pa.
Pittsburgh, Pa.
Rochester, N. Y.
Seattle, Wash.
Springfield, Mass.
St. Louis, Mo.
Tampa, Fla.
Toledo, Ohio
Washington, D. C.

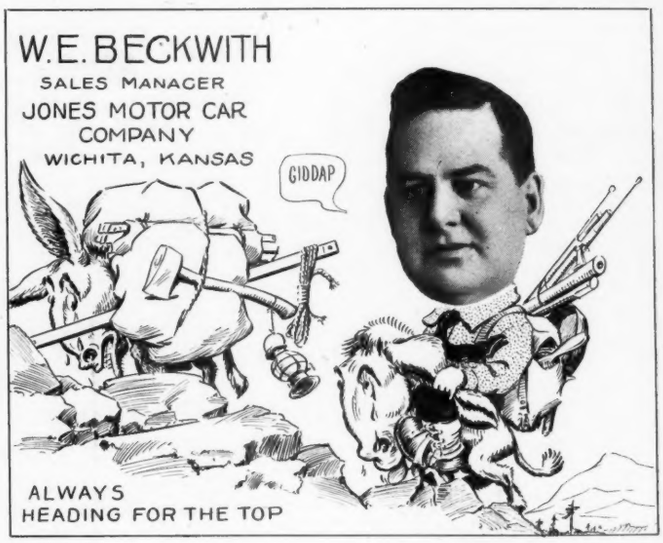
166 Cities are now operating 750 pieces of fire-fighting apparatus equipped with Sewell Wheels

C C J GALLERY of SALES MANAGERS



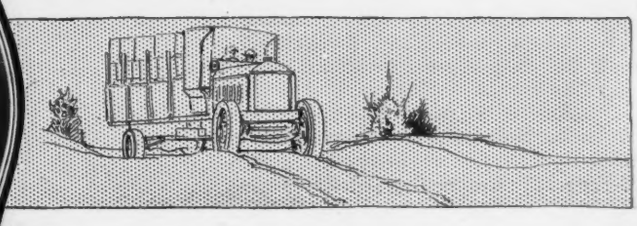






Buda Engines

TRUCK and TRACTOR



The Maximum Pull in field or on highway -constantly!

In 5 Years!- think of it-

"I have not had a wrench on the bearings since that time"

And at the end of 5 years this Buda owner doesn't know what is in *his* engine.

Truly—such a record means "The Maximum Pull—*Constantly*"

Isn't this the kind of service you want in the truck or tractor you sell?

Insist on Buda Installation—you can get it.

Our Book "Superior Engine Service" will tell you more about Buda's history. 10c will bring it to you if you are not a Buda owner

March 25, 1918.

The Buda Company,
Harvey, Ills.

Gentlemen:-

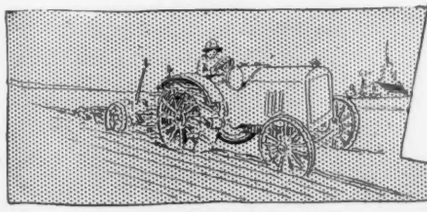
In 1913 I had the pleasure of buying a _____ truck equipped with one of the Buda Motors, 40 horse power. I have not had a wrench on the bearings since that time, although I expect to give it an overhauling soon. I am writing you to find out what packing you use between the bottom of crank case and the main case, and what you would charge me for it should I desire to buy one which I will need.

I would also like to know what new piston rings would cost for this motor and what kind you would recommend for its use.

Hoping to receive an early reply I beg to remain, an advocate of the Buda Motor.

Yours truly,

Benjamin Turner.



The Buda Company, Harvey (Chicago Suburb) Ill.

Selling Transportation and Not Motor Trucks

The Selling of Motor Trucks Does Not Mean the Placing of so Many Trucks, But First an Analysis of the Conditions Under Which They Must Operate

By C. P. SHATTUCK

An ability to analyze the transportation problems of the prospect, to discuss them in detail, and to advise as to the proper equipment and its economical use, are essentialities in the merchandising of motor trucks that frequently determine a sale, and especially a difficult sale. By a difficult sale is meant the selling of a company that has been through the experimental stages in motor transportation and is determined to carefully investigate before making another investment in motor trucks.

The Process of Elimination

It is the difficult prospects that speedily eliminate that class of salesmen termed the "order taker," or the salesman who lacks the ability and training necessary to cope with the situation, and who frequently taxes the head salesman or sales manager when the transportation problem is unconventional. Too frequently an unfavorable impression is created by the salesman in his anxiety to forestall his competitors by a too hasty analysis of the requirements of the prospect or by making claims that cannot be substantiated in practice. Another factor influencing the prospect is the first call of the salesman.

The case of selling Miller, Daybill & Co., shoring engineers and contractors, New York City, affords a good example of the above named conditions. This concern replaced horse-drawn equipment with motor transportation, the equipment being converted passenger cars. These proved efficient, effecting a big saving over the horses, but owing to the character of the material hauled, service, etc., they did not measure up to the requirements.

It soon became generally known that the company was in the market for equipment to haul its material. The "order takers" were quickly eliminated and it is said that some very good salesmen also failed, although well versed in general transportation problems. Some fell down because of their anxiety to close quickly, while others made an unfavorable impression because of their lack of knowledge of the details of the business which, as has been stated, differs from the conventional.

Makes a Careful Analysis

Among the many salesmen delegated by the various dealers to "get" the contract was one who first made a favorable impression on the prospect. Instead of attempting to talk trucks to the purchaser, who is an engineer, he asked permission to make a careful investigation of the conditions under which the trucks were to be employed, of the material to be hauled, of the length of the hauls, the loading facilities, etc., in fact, he won the confidence of the prospect at the start by proposing to make a careful analysis before attempting to offer any suggestions. This is not a new angle in the merchandising of trucks. It is very frequently done by successful dealers, but the point is that the method appealed to the prospect and influenced him to defer his decision until the salesman submitted his plans.

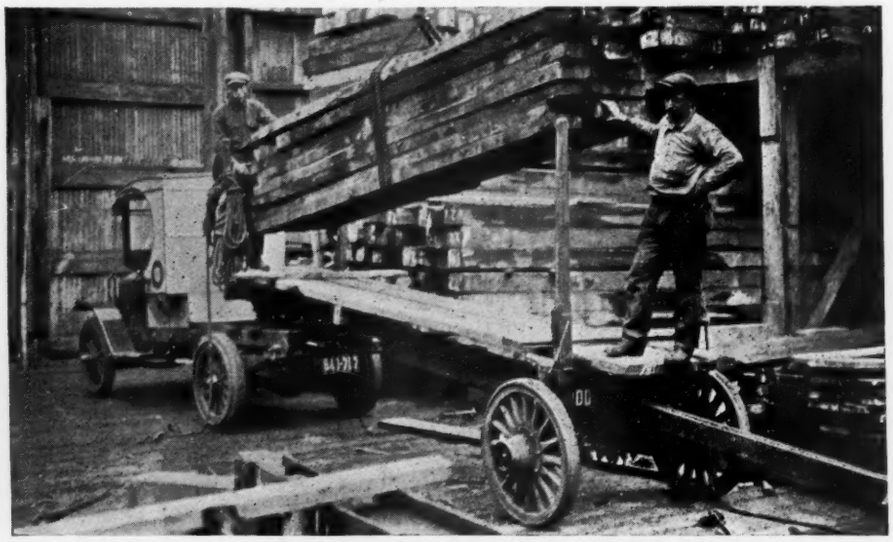
Miller, Daybill & Co. are, as previously stated, shoring engineers and contractors. They raise all types of buildings from the yard. The number and weights structure, suspending them while additions or alterations are made to the ground floor, etc. In addition the company moves structures a few feet or miles as may be required. Now the shoring of the New York buildings not only requires great civil engineering skill, in that thousands of tons are safely held while work is being accomplished, but it also means that it must be done quickly and without interfering with the traffic. The work frequently includes excavating where steel and wood shoring is employed, the length and size of the material varying with the character of the soil.

The work requires the construction of sidewalk and overhead bridges, walks, etc., necessitating the use of lumber of varying weights and dimensions. Some idea of the amount utilized may be obtained by the statement that at one time this company had over two miles of sidewalk construction in New York City. Not only does the amount of material needed vary according to the particular work in hand but the class of material changes on a job; that is, the hauling unit will not only take material to a job but will take some from the work and carry it to another as well as serve a number of jobs. Pick-ups are, therefore, quite common.

Material Varies in Weight, Size, Etc.

Among the various materials used in this work are short wood blockings ranging from 8 x 8 blocks, two and three ft. long, to sections 12 x 12 in., 70 ft. long. There are also 24-in. steel I-beams 34 ft. long, as well as the shoring material, rollers, steam hammers, jacks, tools, and the material used for sidewalks, bridges, etc. With several large operations under way it becomes a problem of material, of getting it to the work when required. Time is, of course, a factor. Space for storing the material is also considered, for rents are high in New York and every inch of space is generally conserved.

The yard and offices of the company are at Avenue B and 18th Street. The problem involves a knowledge of where each material is located, both in the yard and on the work, the amount required, when it will be needed and what is to be shifted and when. The hauling problems include not only hauls in New York City but to Long Island, etc. The company operates over a radius of 35 miles from the yeard. The number and weights of the loads also vary greatly. The hauling unit may be required to transport two tons or six and it is not uncommon



Showing Blocking Ready to be Located on Semi-Trailer. The Trailer is Adjustable to Various Lengths of Blocking

IN establishing an engineering service adequate to investigate any manufacturer's bearing difficulties, this important factor must be kept in mind:

> That to render service in its fullest sense, no investigation can be limited by partiality to a specific bearing type—that to overcome the limitations of individual bearing producers the resources of several must be combined and unified.

Only in this way can the manufacturer who avails himself of such service be assured of an impartial, unbiased study of his frictional problems.

And back of such a service to individuals must be an honest desire to assist industry as a whole through scientific investigation of bearing design and methods of application.

American manufacturers are invited to investigate this service with a view to applying it to their individual problems.

S K F INDUSTRIES, INCORPORATED
Sales, Service and Research Division
165 Broadway, New York

SKF INDUSTRIES

Hess-Bright Ball Bearings
S K F Ball Bearings
Atlas Steel Balls
Gronkvist Chucks
Transmission
Hangers

that 250 maximum loads are required for a single job.

Problem Requires Study

These are some of the problems the salesman mentioned studied. He was several weeks noting the shifting of material, weights, dimensions, etc., time consumed in hauling with the converted passenger cars, loading methods, etc. The salesman burned considerable midnight oil pondering over the problems and making sketches of the proposed equipment. Being a mechanical man and familiar with draughting of bodies, etc., and having a practical knowledge of contracting work, he was able to talk intelligently with the engineer when he submitted his suggestions or recommendations. There followed, of course, changes upon the advice of the engineer and, to make a long story short, the salesman got the order in the face of keen competition because he sold transportation, not trucks.

The salesman who put over the sale was C. Ware Waughop, of the truck department of the Colt-Stratton Company, and the equipment recommended was model D 2½-ton Day-Elder tractors using semi-trailers. It was not a case of a single tractor but developed into an order for five and semi-trailers—a flock of them. The equipment was constructed to meet the peculiar conditions involved, tonnage, balance, speed, turning radius, height, traction, etc.—factors making for efficiency in the work. The tractor has a wheelbase of 110 in. and hauls a semi-trailer adjustable up to 30 ft. wheelbase. The tractor has a speed of about 12 miles an hour in traffic, and the semi-trailer can be quickly adjusted to meet the varying conditions of load. The trailers are employed in what may be called a semi-shuttle service, carrying a maximum load of six tons, and in every instance the tractor hauls loaded semi-trailers, making pick-ups and transfers as has been explained.

Effects 40 Per Cent Saving

Previous to the introduction of motor equipment the company employed three three-horse teams. These were capable of hauling from nine to ten tons on the streets of New York, but their maximum speed was 4 m.p.h., as the company discharged any driver caught driving his horses faster than a walk, experience having proven that it was unprofitable to exceed a walking speed with horses. According to A. D. Brooks, an official of the company, who has charge of the yard and transportation, the tractor effects a saving of 40 per cent. over the horse-drawn equipment. One tractor will easily do the work of two teams or six horses, and has proven its efficiency and economy under normal conditions. An example of the superiority of the tractor over the horses is a haul to Coney Island. A team leaving the yard at six in the morning will consume the entire day in making the round trip, while the tractor will easily make two and have time to spare.

The saving of 40 per cent. referred to is in the cost of the work. At the time the initial motor equipment was installed, cost figures of the company showed that it saved 19½ per cent. over horses, and the new equipment has saved the difference, because of its greater adaptability and the fact that the cost of maintaining horse-drawn equipment has steadily increased. The company does not employ any horses.

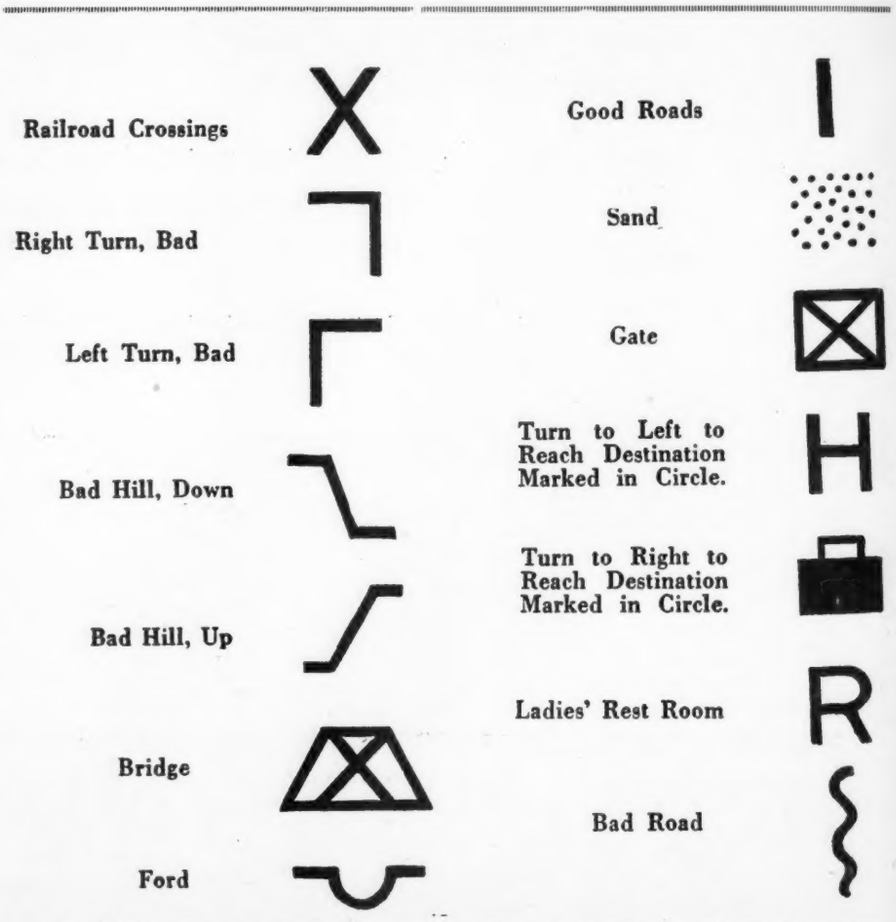
The company is sold on the motor equipment which has proven its advantages many times. During the period when New Yorkers welcomed home the boys from the other side the company was called upon to move a large decorative construction, a job requiring speed as well as the use of considerable material. It is doubtful if the work could have been accomplished in time with horse-drawn equipment, and outside trucks, conventional units, could not have been economically utilized. The tractors with the semi-trailers made light of the work and made profit for the company.

This story should not be concluded without referring to another angle of the sale of the tractors and that is the follow-up. By follow-up is meant the keeping in touch with the purchaser of the equipment, noting its operation and correcting any faults that may develop. By this, the salesman not only keeps the owner satisfied but obtains a wealth of data extremely valuable for application in lines of similar endeavor. It pays the salesman to merchandise transportation even if the transaction involves a considerable expenditure of time and effort, for is it not better salesmanship to sell five trucks and keep the customer sold than to take five single orders without a possibility of repeats?

Serfas Motor Car Co., Lehighton, Pa., announces that its catalogue and price lists were destroyed in a fire which razed its office and garage recently. This company would be glad to receive catalogues and price lists from automobile and accessories manufacturers.

Ideal Tire & Rubber Co., Cleveland, Ohio, is putting on the market a new cord tire.

Bantam Ball Bearing Has Benefit Association.—The employees of the Bantam Ball Bearing Co., Bantam, Conn., met recently and organized the Bantam Ball Bearing Benefit Association. The association has for its object the mutual relief of its members when incapacitated for work on account of sickness or disability.



Code Used by Circle Automobile Men's Association of America on Highway Signposts

The Circle Automobile Men's Association of America is erecting permanent highway markers for the convenience of tourists and the benefit of the dealers. Automobile dealers lease the posts from the Association and pay for installation and upkeep. A large identification "Circle" post is placed in front of the place of business of each "Circle" dealer. The posts are mounted on concrete bases, are seven feet high and support a circular sign bearing the name of the next town with mileage thereto, together with the letters C.A.M.A.A. A system of code marks on the posts indicates road conditions for each mile ahead.

balanced oversize

—the reason why Master Truck owners buy "more Master Trucks"

"BALANCED OVERSIZE" is not a theoretical sales argument. Every Master, every day in the year, is proving the service value of "balanced oversize" construction.

Small parts are made in relation to every other part of the truck. Big parts are made in proportion to the needs of service—and in relation to small parts.

Strength and size are not secured at the expense of uneven wear and tear of usual size parts.

Unusual strains that try the strength of the Master do not throw an unusual load on some weaker part.

"Balanced oversize" construction means a truck every part of which works in smooth harmony. That's why Master Trucks operate economically, satisfactorily and consistently—and that's why Master Truck owners invariably choose the Master again.

There are 10 different models of Master Trucks in 6 sizes—½ to 6 tons.

Build your business on a truck with this qualification, and you build securely. There are a few choice territories still open in which you can represent us and sell this profit-making line. Write for further information and dealer's proposition. Write or wire for territory.

MASTER TRUCKS, Inc. Chicago

Master of the Load on Any Road

MASTER TRUCKS

Master of the Load on Any Road

English Merchants Find the Truck Superior for Hauling Frozen Meat

By Our BRITISH CORRESPONDENT

RECENTLY the writer was asked to inquire into the possibilities of automobile transport for the frozen meat trade, and although it is not possible to enter into details, the general conclusions of these investigations are instructive.

I was asked to institute a comparison between the ordinary 3-4-ton military size motor truck and the railway. Accordingly I went to Liverpool, as perhaps the most important shipping center of the frozen meat trade, and from there took haphazard the railway rates between Liverpool and surrounding population centres, avoiding any attempt at choosing particular journeys which would favor either the one side or the other.

Now the approximate working costs of a 3-4-ton truck doing 12,000 miles a year, at the present time, may be put as follows:

Standing Charges:		
Interest on capital cost (less cost of tires)	$225	
Depreciation	315	
Rent, rates and taxes	50	
		$590
Running Charges:		
Wages, driver	780	
Fuel	1435	
Lubrication	105	
Tires	500	
Stores	10	
Cleaning	75	
Repairs	450	
Insurance	70	
		$3425
		$4015

This in English currency gives a cost per mile of 12.05 pence, or say 24 cents.

Taking these figures as a basis for the gasoline truck, its cost may be compared with the railway from Liverpool to Preston, a distance of 31 miles. Allowing for the return journey of the automobile, empty, the cost of transporting a four-ton load by road would work out to $15.50, and by railroad, at the rate of $3.90 a ton for any quantity, the cost of transport would be $15.75. From Liverpool to Manchester the distance is 36 miles, and the comparative costs work out to $18.04 for the road, against $12.18 by rail. In neither of these cases, however, are the railway charges for delivery and collection included, while, since the automobile delivers from door to door, it can not only be regarded as inclusive of the cost of collection and delivery to consignee, but can generally, for a very small extra mileage, include the cost of distribution to the retailer.

Again, in both of these cases, it has been assumed that the road truck has had to perform the full return journey unladen. At the present time there is a strong feeling in the British meat trade against the employment of insulated or refrigerator vans for loads other than meat, but this is only because the railway companies with their refrigerator cars have shown a gross lack of discrimination in the choice of those loads. There is no earthly reason why a refrigerator car should not carry provisions, if it has insufficient or no meat to carry, and people in the frozen meat trade are fully alive to this fact, and ready to acquiesce in it. As the threat of gigantic transport strikes have made the authorities here go very carefully into the question of automobile transport for food supplies, there is no reason why some such organization should not be utilized to insure return loads.

Before concluding, one more case can be taken, namely, that between Liverpool and Crewe, a distance of 38 miles. For this the railroad charged $5.12 a ton, but this figure includes delivery at Crewe. In this case we find that the gasoline truck can collect the four-ton load and deliver it for $19.04, even though it earns not a cent on the return, while the railroad can take it from its Liverpool depot only and deliver it for $21.

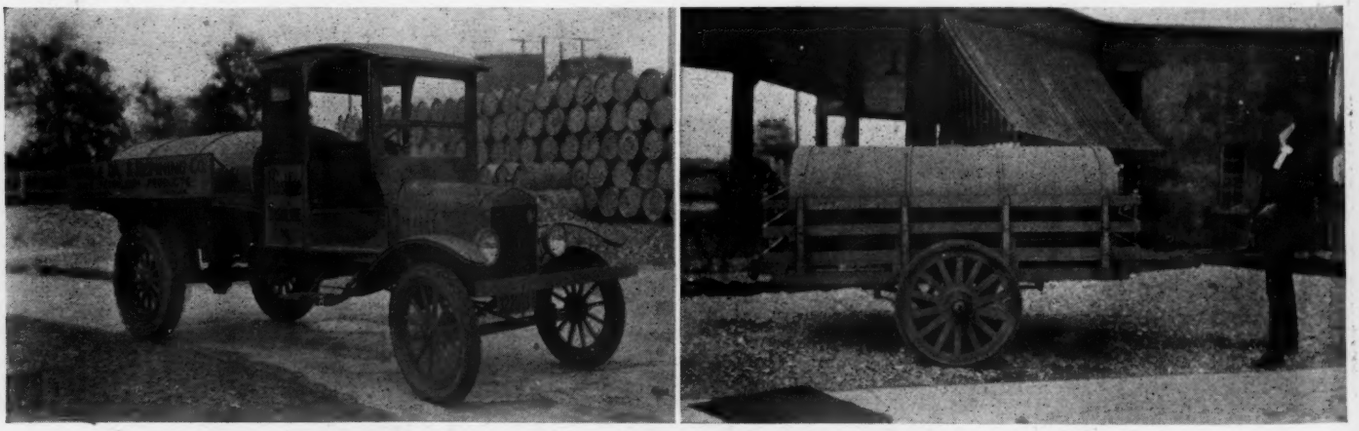
In no case is the road truck then really faced with a difficult problem to earn enough on the return journey to meet the railroad rates, while generally it already has a slight advantage, even including the cost of a wholly unprofitable return journey. If to this we add the advantages of collection and delivery without extra cost, the advantages of eliminating the delays and risks of transhipment, and of having transport under one's own control so that the arrival of the goods can be accurately known and arrangements made beforehand for their disposal, these figures prove in a striking and overwhelming way the present superiority of the automobile for such work for comparatively moderate distances.

Oil Truck With Pneumatics Saves Money

A very good chance for comparison of the merits of pneumatic and cushion tires on trucks is afforded by the performance of two one-ton Ford trucks, used by the Humble Oil & Refining Co., of Houston, Texas. The trucks, fitted with tank bodies, are exact duplicates, except that one is fitted with Goodyear pneumatic tires, 31 x 4 in. on the front wheels, and 36 x 6 in. on the rear, while the other has Goodyear cushion tires.

When Ellington Flying Field was busiest, the pneumatic-tired truck made two trips per day from Houston to the field, carrying 300 gal. of gasoline on each trip, at the rate of thirty miles an hour. The distance is 36 miles to each round trip. Sometimes it towed a trailer, when its speed was necessarily reduced, as the trailer had cushion tires.

The company claims that the truck shod with pneumatic tires is worth approximately $25 per month more to them than the cushion tired truck, owing to its ability to go faster on its trips, and because it economizes on fuel and repair upkeep.



The Type of Truck and Trailer Used by the Humble Oil & Refining Company, of Houston, Texas

Driver, James L. Drury, and the Packard 1½ ton truck with which he won first owner's and driver's prizes in Class A—Packard National Efficiency Test, making the best record of 1760 contestants

UNITED STATES RUBBER COMPANY
US
RUBBER SYSTEM
AND ASSOCIATED COMPANIES

'CONTRASTING the wonderful mileage facts of these tires with the abuse and battering received during the contest, proves beyond doubt, that UNITED STATES TIRES ARE GOOD TIRES.'

James L. Drury

Driver

United States Tires

Are Good Tires

Who's Who in Reconstructive Work

Organization of Government Committees With Which the Automotive Industry is Concerned

Council of National Defense

Secretary of War, Chairman.
Secretary of Navy.
Secretary of Interior.
Secretary of Agriculture.
Secretary of Commerce.
Secretary of Labor.
Grosvenor B. Clarkson, Director.

Advisory Commission

Daniel Willard, President, B. & O. R. R., Chairman.

Howard E. Coffin, Vice President, Hudson Motor Car Co.

Julius Rosenwald, President, Sears, Roebuck Co.

B. M. Baruch, banker.

Dr. Hollis Godfrey, President, Drexel Institute.

Samuel Gompers, President, American Federation of Labor.

Dr. Franklin Martin, Secretary, Gen. American College of Surgery.

Reconstruction Research Division

18th & D Sts., N. W.

The United States Council of National Defense announces its readiness to place at the command of the business world the information contained in the voluminous collection of data brought together, classified, indexed, and partly digested by its Reconstruction Research Division. It also offers the services of this Division in the procurement of such further special information as may be desired and which may aid in the reorganization of industry and the resumption of trade, or which may in any other manner promote progress in Reconstruction.

National Automobile Chamber of Commerce

Second National Bank Building, 509 Seventh St.

Hugh Chalmers, Vice-President of the N. A. C. C., is acting as Washington representative of the N. A. C. C. members. A staff consisting principally of engineers is assisting Mr. Chalmers in giving information to automobile manufacturers in connection with government work. Alfred Reeves, Gen. Mgr. of the N. A. C. C., spends a large part of his time in Washington, in connection with the various interests of the automobile industry.

Highways Transport Committee

Council of National Defense Building, 18th and D Sts., N. W.

This committee was appointed by the Council of National Defense, to assist in making most efficient use of highways as one of the means of strengthening the Nation's transportation resources. The most important policies thus far adopted are: (1) To increase highways transport resources, and curtail waste by eliminating the running of vehicles empty. Return Load Bureaus have been established for this purpose. (2) To make more food available and save farm labor for work on farms. Rural Motor Truck Express routes for agricultural areas to consuming centers or important shipping points are advocated. (3) To make highway transportation more economical and effective by encouraging the use of power driven vehicles. (4) To assist the Railroad Administration in the elimination of the terminal congestion.

John S. Cravens, of the Council of National Defense, Chairman.

James I. Blakslee, Fourth Assistant Postmaster General.

J. M. Goodell, Consulting Engineer, Office of Public Roads & Rural Engineering.

James H. Collins, investigator in Market Survey Bureau of Markets.

R. S. MacElwee, second assistant chief, Bureau Foreign & Domestic Commerce.

Charles W. Reid, executive secretary.

Grosvenor B. Clarkson, Director of the Council, ex-officio.

Lee Lamar Robinson, Director of educational work.

Advisory to Highways Transport Committee

Raymond Beck.
Wm. Phelps Eno.
C. A. Musselman.
Lee Lamar Robinson.
John T. Stockton.
Arthur H. Blouchard.

Motor Truck Committee of the N. A. C. C.

This Committee was organized for the purpose of co-operating with the Highways Transport Committee, in matters pertaining to motor truck haulage, and to give to builders of motor trucks of the United States such assistance as they may call for. It carries the authority of the N. A. C. C.

George M. Graham, Chairman.
W. T. White.
M. L. Pulcher.
David Ludlum.
D. C. Fenner.

S. A. Miles, in charge of rural motor delivery feature of the committee's activities.

Motors Division, Quartermaster Corps

This division procures motorized vehicles for the Motor Transport Corps.

Col. Fred Glover, Chief.

Maj. Guy Hutchinson, Executive Officer.

Col. E. S. George, Assistant Chief.

Maj. A. H. Zacharias, Production Assistant.

Maj. C. S. Dahlquist, Technical Assistant.

Procurement Branch

Maj. A. H. Browne, A and B trucks.
Capt. A. C. Keleher, Militor trucks.
Maj. W. T. Fishleigh, AA trucks, ambulances, automobiles.
Maj. R. Miller, Jr., special vehicles, motorcycles, bicycles.
Guy Morgan, spare parts, accessories, tires.
James Morrison, bodies.
Lt. W. J. Kennedy, orders.
D. F. Hess, priorities.
Capt. E. P. Hangliter, gauges.

Administrative Branch

Capt. S. P. Dean, Chief.
Capt. A. D. Stansell, Office Control.
W. A. Dickey, Personnel.
D. G. Blair, Clearances.
A. G. Drefs, Finance and Statistics.
Capt. H. M. Lowy, Trucks.

District Offices

Maj. M. B. Edgerton, Chicago.
Capt. D. S. Devore, Cleveland.
Maj. E. L. Jaco, New York.
Maj. G. D. Wilcox, Detroit.

Motor Transport Corps

Seventh and B Sts.

This Division has charge of engineering, operation and maintenance of all motor vehicles except tanks, caterpillars and other artillery tractors, for all divisions of the United States Army in this country, as well as overseas.

Brig. Gen. C. B. Drake, Director.
Col. J. F. Furlow, Asst. Director.
Col. C. Seamon, Asst. Director.
Col. W. H. Noble, Asst. Director.

United States Railroad Administration

Regional Directors:

A. H. Smith, Eastern Territory, Grand Central Terminal, New York City.

N. D. Maher, Pocahontas Region, Roanoke, Va.

B. L. Winchell, Southern Division, Healey Bldg., Atlanta, Ga.

R. H. Aishton, Northwestern Territory, 226 W. Jackson Blvd., Chicago, Ill.

Division of Capital Expenditure, United States Railroad Administration

J. C. Powell, Director.

United States Employment Service, Department of Labor

Main Office, 916 16th St., N. W., Washington, D. C.

John B. Dinsmore, Director General.
C. T. Clayton, Asst. Gen. Dir.

N. A. Smyth, Act. Asst. Dir. Gen., Sec. of Policies and Planning Board, Chief Common Labor Section.

T. B. Powderly, Chief, Division of Information, Administration and Clearance.

M. A. Coykendall, Chief, Division of Farm Service.

W. E. Hall, Chief and National Director of Public Service Reserve and Boys' Working Reserve.

R. W. Babson, Chief, Division Inquiry and Education.

I. W. Litchfield, Chief, Clearance Section (Skilled Labor).

S. W. Mason, Chief Clerk.

James L. Hughes, Asst. to Dir. Gen.

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